TECHNOLOGY

JUNE, 1953

457 n.6

Telephone Engineer and Management

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THE NATIONAL TELEPHONE MAGAZINE

Featuring In This Issue—

- USITA Executive Conference Report, by John G. Reynolds
- Modern Circuit Testing Methods, by Richard Allen
- Modern Central Office Maintenance, by John S. Reed
- Washington Bureau • Questions & Answers • Small Company Talk

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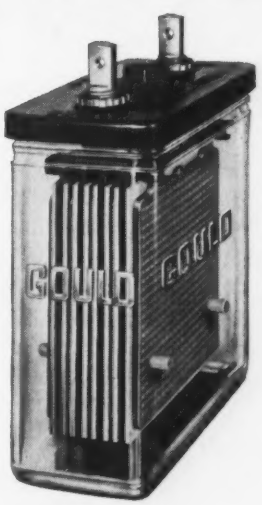

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The National Telephone Magazine

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FRONT COVER

USITA Executives' Conference at Chicago's Edgewater Beach Hotel, May 25-26, was attended by 430 Independent telephone industry members. Front cover photos were taken by TE&M camera.

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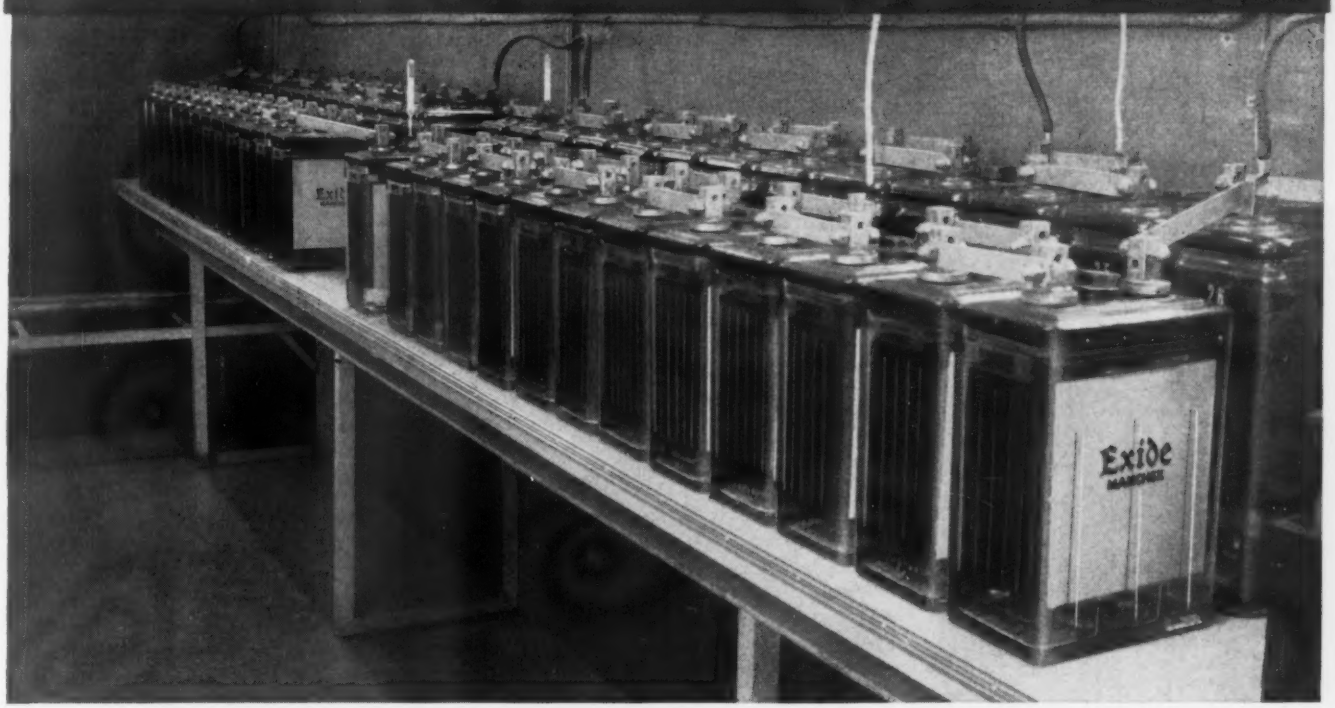
PROVIDING MODERN TELEPHONE SERVICES IN BOYERTOWN, PA.

Conestoga Telephone and Telegraph Company
and dependable

Exide-Manchex
BATTERIES

Modern Plant of Conestoga Telephone & Telegraph Company, Boyertown, Pa.



Two rows of Exide-Manchex Batteries at Boyertown Plant.

Telephone progress on the march! Conestoga Telephone & Telegraph Company's Boyertown plant serves 3026 subscribers. The relatively new exchange has 1200 lines, with 400 additional lines planned for the future. And in the Boyertown plant, Exide-Manchex batteries are providing power for all telephone services. Exide-Manchex offers unequalled performance and long life . . . the results of Exide's continuous research-engineering program. Exide-Manchex assures:

POSITIVE OPERATION: Dependable performance for all telephone battery requirements—central office and private exchange equipment.

ADEQUATE RESERVE POWER for emergencies beyond normal needs.

LOW OPERATING COST: Extremely low internal resistance.

LOW MAINTENANCE COSTS: Water required about once a year. No change of chemical solution needed during life of battery.

LOW DEPRECIATION: Sturdy, long-life construction, which includes the exclusive manchester positive plate.

GREATER CAPACITY in a given amount of space avoids overcrowding of equipment.

• • •

Various sizes and types of Exide Batteries are available in plastic containers.

Exide-Manchex is your best battery buy for all telephone services

Exide-Manchex batteries are different. Their famous Exide manchester positive plates are unique in design and construction, and are used *exclusively* in this outstanding storage battery.

1888 . . . DEPENDABLE BATTERIES FOR 65 YEARS . . . 1953

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 2 • *Exide Batteries of Canada, Limited, Toronto*

"EXIDE" and "MANCHEX" *Reg. T.M. U.S. Pat. Off.*

Instant HEAT

that's "QUICK ON THE TRIGGER"

and "RIGHT ON THE TARGET"

USE THE

WALL TRIG·R·HEAT SOLDERING IRON

READY TO SOLDER IN SECONDS

$11.95

HEAT-CONTROL *Thermostatic Action guaranteed for the life of the iron, or double your money back!*

Yes—the heat is QUICK! Just touch the trigger, and in seconds TRIG-R-HEAT is ready to solder. Heat is RIGHT, too! An amazing, exclusive thermostatic action *(without the use of transformers or fragile thermostats),* quickly brings TRIG-R-HEAT to "on-the-target" soldering temperature and *keeps* it there. Iron is never too cool for efficient work—never too hot for the good of the tip. The result—solder doesn't fuse to iron, so tips last two to three times as long as those on irons without this exclusive feature. A built-in spotlight makes dark, hard-to-reach places easy to solder. Wattage starts at approximately 400 watts and idles at about 100 watts. Operates on 115-120 volts, AC or DC. Get Wall TRIG-R-HEAT at your dealer's *today!*

OVER 20,000,000 SOLDERING PRODUCTS SINCE 1864

SOLDERING PRODUCTS WALL The Safety Line SINCE 1864

WALL MANUFACTURING CO.

GROVE CITY • PENNSYLVANIA

COMING CONVENTIONS

"There has never been a time . . . when it was more necessary for telephone people to take common counsel upon common problems."

California Independent Telephone Association, Ambassador Hotel, Los Angeles, June 18 and 19.

Michigan Independent Telephone Association, Hotel Pantlind, Grand Rapids, Sept. 3 and 4.

Tennessee Telephone Association, Hermitage Hotel, Nashville, Sept. 17 and 18.

Arkansas Telephone Association, Majestic Hotel, Hot Springs, Sept. 21 and 22.

Rocky Mountain Telephone Association, Newhouse Hotel, Salt Lake City, Utah, September 24 and 25.

United States Independent Telephone Association, National Convention, Conrad Hilton Hotel, Chicago, October 12, 13 and 14.

North Carolina Telephone Association, Carolina Hotel, Pinehurst, October 22 and 23.

South Carolina Telephone Association, Clemson House, Clemson, October 26 and 27.

Virginia-West Virginia Independent Telephone Associations, Hotel Roanoke, Roanoke, October 29 and 30.

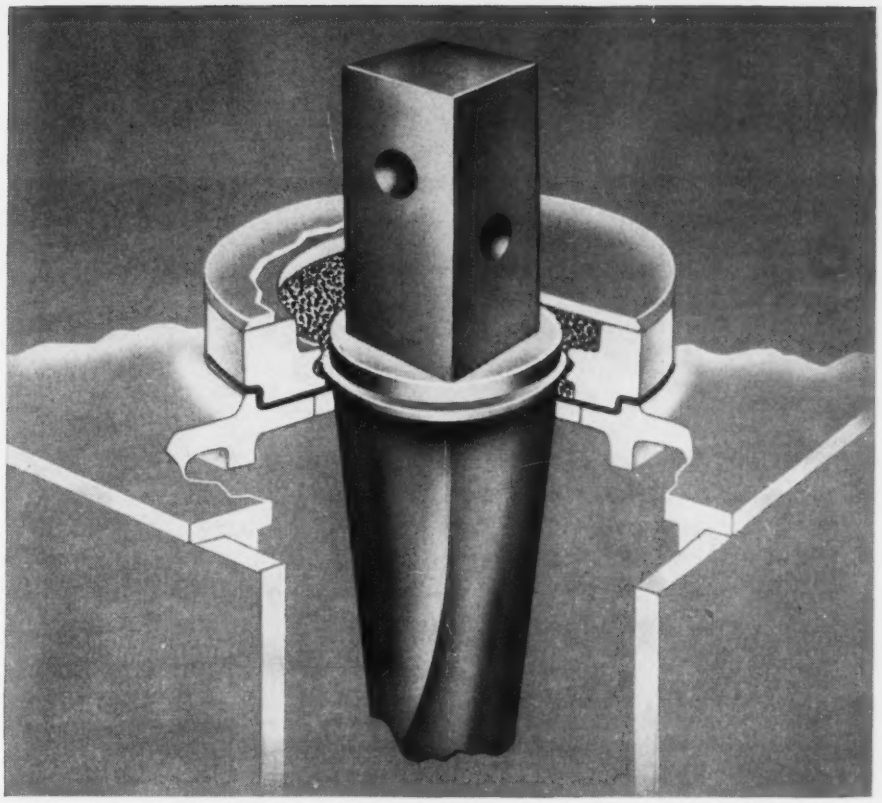
Alabama - Mississippi Independent Telephone Association, Jefferson Davis Hotel, Montgomery, Ala., November 9 and 10.

Florida Telephone Association, Sheraton Plaza Hotel, Daytona Beach, November 12 and 13.

Georgia Telephone Association, Henry Grady Hotel, Atlanta, Nov. 16 and 17.

Oklahoma Telephone Association, Biltmore Hotel, Oklahoma City, Nov. 19 and 20.

Now! Battery-acid "seepage" eliminated



... by an ingenious seal that eliminates gaskets

The "seepage" of battery acid through inefficient post seals is an annoyance and danger known to all battery users.

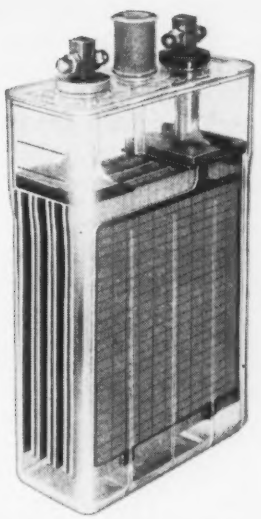
When C&D engineers perfected the revolutionary PlastiCal telephone battery, they equipped it with the ingenious Plastite* post seal illustrated above. It is unquestionably the finest seal yet developed.

The Plastite seal is formed by seating a heavy color-coded plastic nut over each terminal and bonding it to the cover. This forms a hermetical seal between the cover and the nut and eliminates dependence upon the conventional rubber gasket. A plastic dust cover is then bonded to the top of the plastic seal nut. The minute crevices between the threads of the post and the plastic lock nut are filled under pressure, with a pliable, low bleed rate, age-resistant silicone grease.

The completed seal is impervious to acid, gases and air. It will not contract or expand appreciably during the life of the battery.

The Plastite seal is just one of the many advanced-design features of C&D's PlastiCal—one more reason why PlastiCal is truly "the century's greatest battery development!"—and decidedly your best telephone battery buy!

**Patented*



Write for bulletin T-528!

Get complete specifications on C&D's PlastiCal—the battery that

- **lasts at least 40% longer**
- **uses 1/5 as much current and water**
- **delivers high output all its life**

C&D

BATTERIES, INC.

of Conshohocken, Pa.

Manufacturers of Industrial Batteries since 1906

SALES AND SERVICE OFFICES IN PRINCIPAL CITIES FROM COAST TO COAST

HUBEYE BOLTS, EYES, AND NUTS

The large-radius rounded section of the HUBEYE prevents excessive localized strain on the guy, and the smoothly-rounded high sidewalls prevent concentrated strain on individual strands.

HUBEYE popularity has led to its standardization for all Hubbard attachments where time, money and maintenance are saved by elimination of the thimble.

The drop-forged eye is stronger than the rod section from which it is formed. All HUBEYE items are protected against corrosion by Hubbard Double-Dip Hot Galvanizing.

"Hang the Load on Hubbard Hardware!"

OVERHEAD

Cable Suspension Material—Wireholders Pole Seats and Balconies—Clevises Braces—Drive Hooks—Messenger Dead Ends—Extension Arms—Long Span Material—Pins—Clamps—Guards—Stubbing Bands—Guy Protectors—Guy Clamps Pole Struts—Clips—Straps—Hangers Carriage Bolts—Rings—Transposition Brackets—Eye Bolts—Pole, Corner and House Brackets—Guy Hooks—Strain Plates—Storm Guy Straps—Lags—Machine and Hubeye Bolts—Sidewalk Guys REA Telephone Hardware

UNDERGROUND

Cable Racks—Manhole Ladders and Steps Pulling-in Irons—Expanding Anchors Cable Shields—Screw Steelwing Anchors Anchor Rods—Ground Rods and Clamps

HUBBARD AND COMPANY

ESTABLISHED 1843

PITTSBURGH • CHICAGO • OAKLAND, CALIFORNIA

Tid Bits

Phone Treatment

IN HIGH POINT, N. C., when Dick Pals was hospitalized recently, his dejected parrot, Polly, refused to eat. Finally, the family arranged for Pals to talk to the parrot by telephone. Polly tried to seize the receiver and began yelling "Daddy." The bird's appetite returned to normal immediately.

• • •

"Auntie"

LATEST of the many services offered by Vienna's state-owned telephone system is a woman called "Auntie" who reads fairy tales over the telephone. Customers can just put on their slippers, fill up their pipes, dial "Auntie" and lean back. Children, of course, shouldn't smoke pipes.

• • •

'Round the World in 17 Minutes

THE NIPPON TELEGRAPH & Telephone Public Corp., which operates Japan's telecommunications system, literally sent itself a letter Oct. 22 to demonstrate to the Japanese public the value and speed of international communications. Officials of the company dispatched the "round-the-world" telegram from Tokyo. The globe-girdling transmission was completed in 17 minutes.

• • •

Lifesaver

IN GRAHAM, TEX., T. G. Patterson may owe his life to the S. W. Bell. While preparing to "shoot" an oil well with explosives, his mobile telephone rang. While answering the call in his car, the charge in the well blew up prematurely. If the telephone hadn't rung, he would have been directly over the blast. Says Patterson: "Mobile service is worth every penney it costs, if I never receive another call over it."

NEWSLETTER
TELEPHONE ENGINEER

Fortnightly TELEPHONE ENGINEER ★ TELEPHONE ENGINEER AND *Management*
ON THE 1st OF EACH MONTH ON THE 15th OF EACH MONTH
NEWSLETTERS *on Alternate Weeks*

June 15, 1953

Dear Sir:

Survey indicating that 40.3% of nation's farm homes had telephone service in July, 1952, was made public May 27 by Agriculture Department's Bureau of Agricultural Economics. Bureau said that average bill paid by farmers for local service was $3.06 in last year's survey, compared with $2.87 year before. Monthly averages, including toll calls, were $4.62 in 1952 & $4.53 in 1951, thus recording decline in average amount spent for toll calls. Bureau said that farmers paid 7% more for telephone service in 1952, which apparently related to local service charges.

As of July, 1952, bureau said, about 3% of farmers had private lines, nearly one-fifth were on two-to-four party lines, & more than three-quarters were on lines with five or more parties.

By geographic regions, it was pointed out, highest average monthly bills were $6.54 in Pacific Coast area & $6.26 in New England. Bureau said, "Much of the regional variation in cost is a reflection of the difference in type and quality of service provided to farmers in the various regions."

It was reported that about 45% of farm telephones were served by Bell System companies, including 8% of those in New England & ranging down to 25% in East North Central area. New England had highest proportion of private line & two-to-four party service.

Table attached to report showed that average monthly farm telephone rates, for local service only, have gone from $2.05 in 1947 to last year's $3.06.

* * *

Facilities & services of commercial telephone companies must be employed to provide administrative telephone system on any military installation, according to Department of Defense directive whose contents became known May 29.

Directive, aimed at establishing Department of Defense policy "which will effect maximum economy and efficiency in the provision of administrative telephone service on military posts, camps, stations, bases and installations," orders military authorities to "make all practicable utilization of the facilities and services of commercial telephone companies to the extent that such are reasonably and adequately available on a lease and rental basis."

Accordingly, directive states, "no funds may be obligated by a military department for the purpose of providing a government-owned and main-

tained administrative telephone system" on a military installation without prior authorization of Secretary of Defense. In exceptional cases, Defense Secretary must give prior approval.

* * *

Robert E. McLaughlin, Washington attorney who has taken office as new member of the District of Columbia Public Utilities Commission, has been elected chairman of the regulatory agency. Chairman McLaughlin succeeds Kenneth Spencer, who has resigned. There has been no definite indication of Mr. Spencer's successor as commissioner, but name of Travis T. Brown, Washington lawyer & an early Eisenhower supporter, has been prominently mentioned.

In North Carolina, Samuel O. Worthington has been appointed to the Utilities Commission, succeeding Joshua James. Mr. Worthington is a Greenville, N. C., attorney of long experience. At same time, Chairman Stanley Winborne was reappointed for another six-year term, & Commissioner Edward H. McMahan was reappointed for four years.

* * *

Improved plan for handling "leave word" calls, in which called party not available to talk is left message to call operator in the distant city, is being put into effect in Bell System & generally will be in full operation by Aug. 1.

Under new arrangement, operator leaving message will give telephone number of calling party, & his name if possible, as well as her number & location from which call is placed, as is now done. Heretofore, it has frequently been necessary to ask called party, when he returns to his telephone, who might have been calling him from distant city.

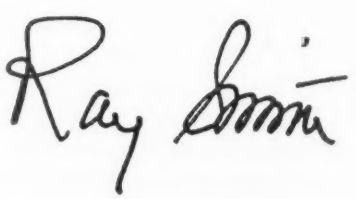
* * *

Virginia's public utility seizure law was upheld last month by State Circuit Judge Harold F. Snead who ruled that act "is not in conflict with laws of United States & is not repugnant to Constitution of United States & Constitution of Virginia, & is valid." Judge Snead ruled in case resulting from state seizure of bus line during a strike.

Union attorneys contended that Virginia law paralleled Wisconsin law which US Supreme Court has ruled unconstitutional.

* * *

Continued progress of General Tel. Corp. in improving its earnings again was demonstrated last month with announcement of earnings for first four months of this year. General earned $4,203,000 during period, compared with $2,575,000 in first four months last year. Earnings recorded were $1.53 per average share, compared with $1.16 in the same part of 1952.



Ray W. Smith, Editor

PHILCO MICROWAVE PHILCO MICROWAVE PHIL
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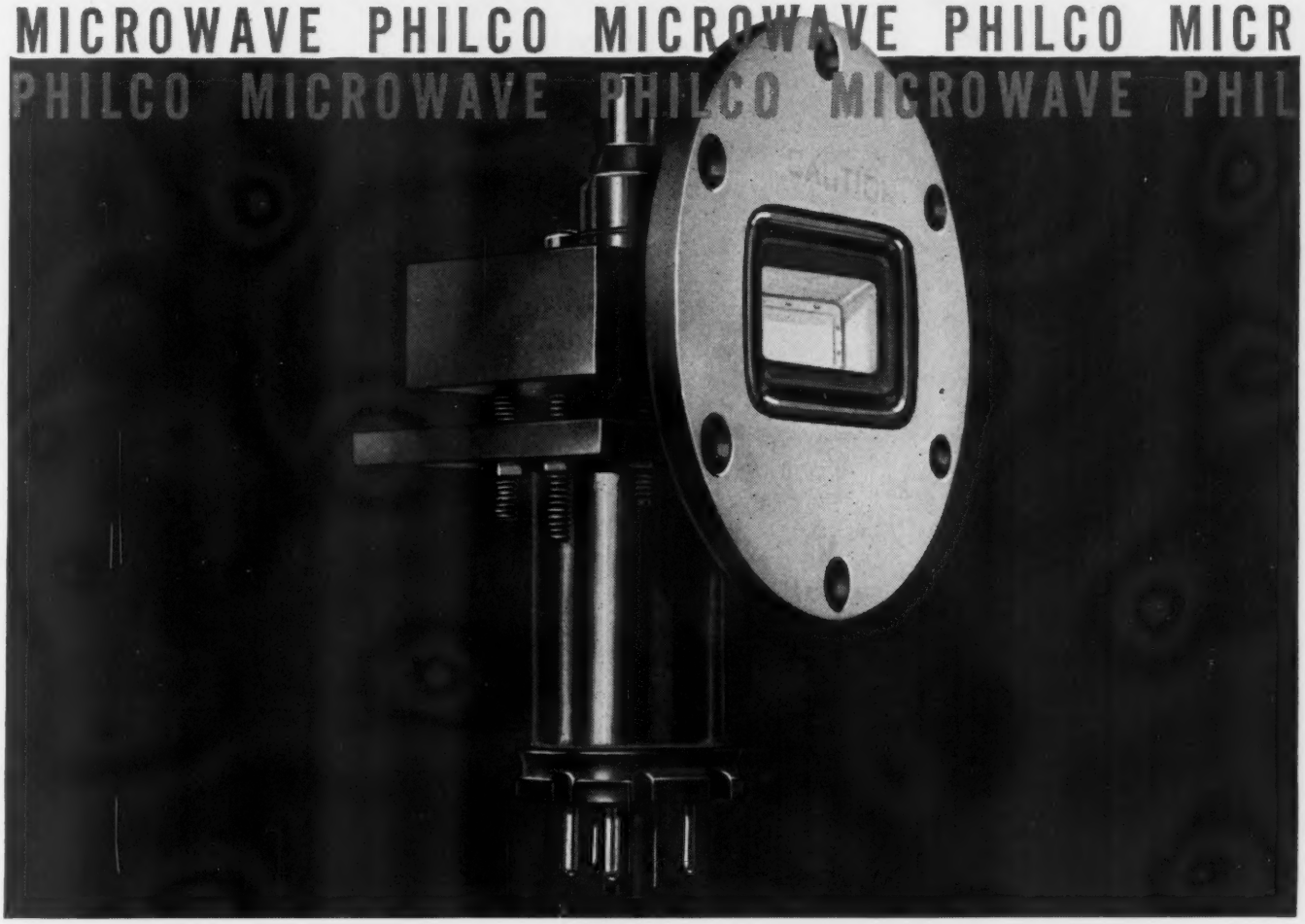


POWER HOUSE

The heart of Philco Microwave is this "Power House" klystron . . . with it Philco has the highest equipment power output in the 6000-7500 mc band . . . generating a full watt of output power it provides Philco Microwave systems with a reliability safety margin of 30 decibels (1000 to 1) . . . greater assurance of performance under any and all field conditions.

Philco's exclusive feedback design makes possible full use of this powerful klystron . . . requires the use of only two of these klystrons for simultaneous two-way transmission and reception . . . minimizes cumulative distortion and noise with numerous repeater stations. In combination with other Philco features such as custom-sized, high gain, antenna-reflector systems and operation in the preferred and interference free frequency band, the result is reliable, high quality communications.

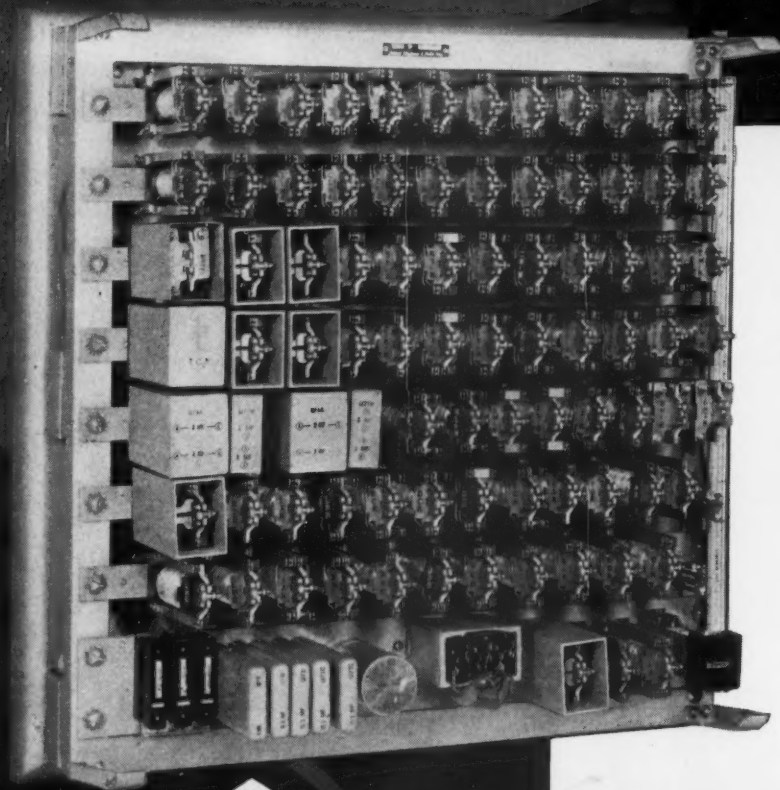
Look to Philco Microwave for the answer to your communications requirements.

For Complete Information Write to Department TE

PHILCO CORPORATION

GOVERNMENT & INDUSTRIAL DIVISION · PHILADELPHIA PA.

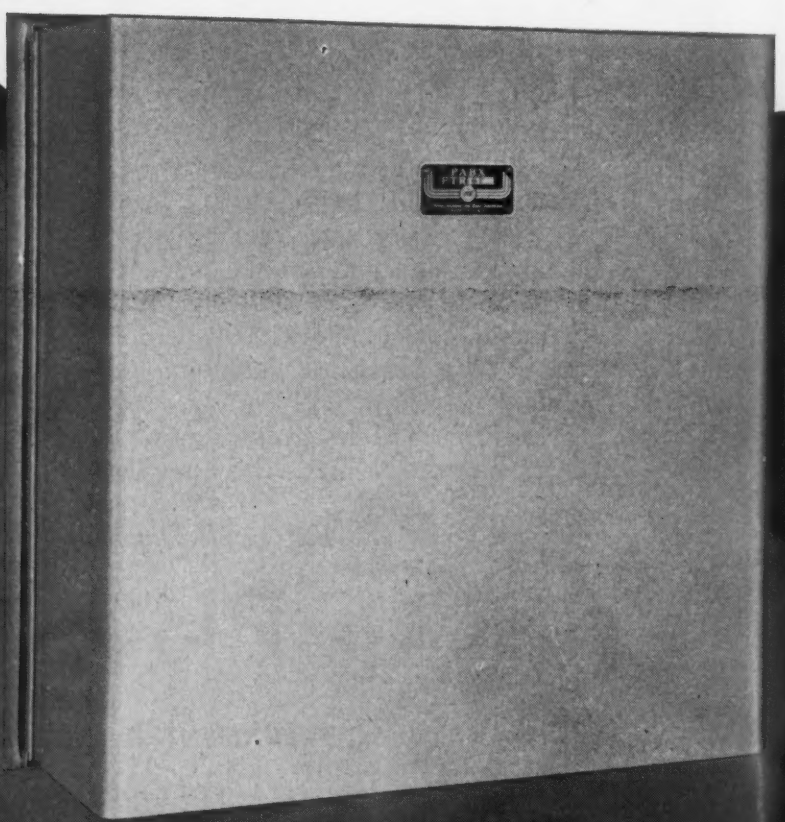
KELLOGG presents economical



Here it is! . . . The *Automatic* PABX that's *"made to measure"* for banks, newspapers, hospitals, small businesses and large residences. Small, easy to install, light weight, convenient, this Federal PABX provides automatic intercommunication that's unsurpassed in its field! This PABX sold exclusively by Kellogg, is equipped with ultimate number of lines, but when desired, an additional bridged extension can be added to each original station.

The customer gets it equipped to capacity. But when connected at partial capacity,

6-line PABX, shown with and without cover. A strip of soldering terminals is provided for the line and power leads. Cover top includes a "knock-out" for entry of leads.



Automatic Intercommunication

for the SMALL BUSINESS or LARGE RESIDENCES

according to the customer's requirements, additional stations can be added without change in basic equipment. Units are adaptable — provide the advantages usually found only in larger systems. Flexible, self-contained, economical, arranged for wall mounting, Federal's PABX expedites trunking of incoming and outgoing calls. The wall mounted units are furnished in 6-line and 11-line sizes.

In engineering, the components are functionally simple. High performance and trouble-free operation are assured. . . . There is also a Federal PABX (FTR 25C) with a capacity of 25 lines.

VACATION NOTICE The Kellogg factory, branches and sales office will be closed for a vacation July 13 through July 24.

Up-to-Date *Features*

OUTGOING CALLS
Outgoing calls originated direct from any unrestricted station.

INCOMING CALLS
Incoming calls answered from any unrestricted station through the operation of a transfer button included in the telephone. This means increased savings in the elimination of a special PABX attendant with no loss in service efficiency.

EXTENSION TO EXTENSION CALLS
A number of local links are provided for STATION to STATION calls with the normal operating features of a large automatic system.

CONSULTATION CALLS
Consultation calls can be originated from any station.

TRUNK CALL TRANSFER
Incoming calls from a trunk to one station can be transferred to any other station in the system.

EXECUTIVE RIGHT-OF-WAY
A number of predetermined stations may be equipped with right-of-way provisions to permit those stations to break in on a busy line.

POWER EQUIPMENT
Dial tone, busy tone and ringing current are an integral part of the system and the power is derived from a battery eliminator.

More than Half a Century of Service

Since 1897 KELLOGG has devoted its energies—its research and manufacturing facilities—to the advancement of Independent Telephony. Today, Kellogg stands as the unrivaled single source of supply for everything in telephone equipment for the Independent field. Look to Kellogg and you look to the best!

KELLOGG

AN IT&T ASSOCIATE

An Associate of International Telephone and Telegraph Corporation

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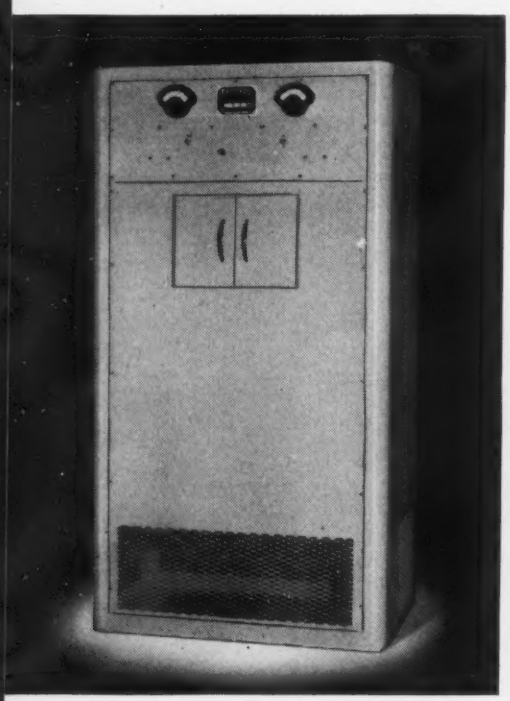
KELLOGG... for SUPPLIES

Well-stocked inventories of guaranteed line supplies are carried in Kellogg warehouses located in Chicago, Kansas City, Dallas, San Francisco, and St. Paul. Order from the warehouse nearest you and be assured of prompt deliveries.

- **The following nationally-known manufacturers of supplies for the independent telephone industry are participating in the Kellog Co-operative Advertising Campaign.**

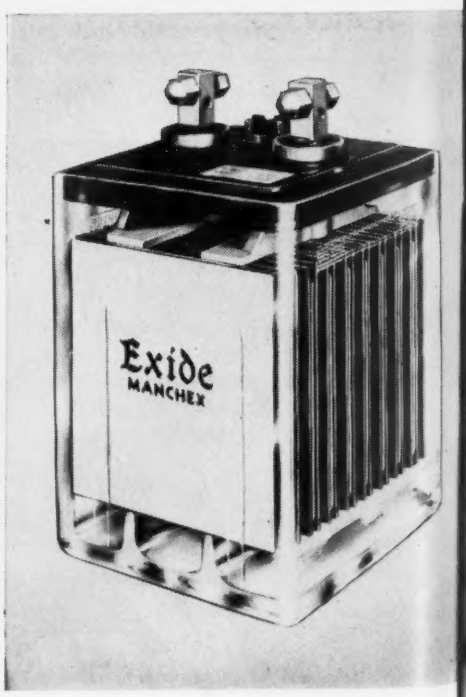
American Creosote Works, Inc.
Ansonia Wire & Cable Company
John Bean Division
Food Machinery and Chemical Corp.
Bishop Manufacturing Corporation
E. D. Bullard Company
Continental Cross-Arm Co., Inc.
Cook Electric Company
Copperweld Steel Company
Diamond Wire & Cable Company
The Electric Storage Battery Company
Everstick Anchor Company
General Insulated Wire Works, Inc.
Gould-National Batteries, Inc.
W. A. Hammond Drierite Company
Indiana Steel & Wire Company
Kester Solder Company
Lorain Products Corporation
National Carbon Company
A Division of Union Carbide and Carbon Corporation
National Telephone Supply Company
Newman Manufacturing Company
Ray-O-Vac Company
Raytheon Manufacturing Company
Reliable Electric Company
M. M. Rhodes & Sons Company
R T & E Co.
Schauer Manufacturing Corp.
Telkor, Inc.
Vulcan Electric Company

Reliable-Economical! "Eveready" "Columbia" "Gray Label" telephone dry cells give you dependability, plus economy thru higher sustained voltage and extra service life. NATIONAL CARBON COMPANY, a Division of Union Carbide and Carbon Corp.

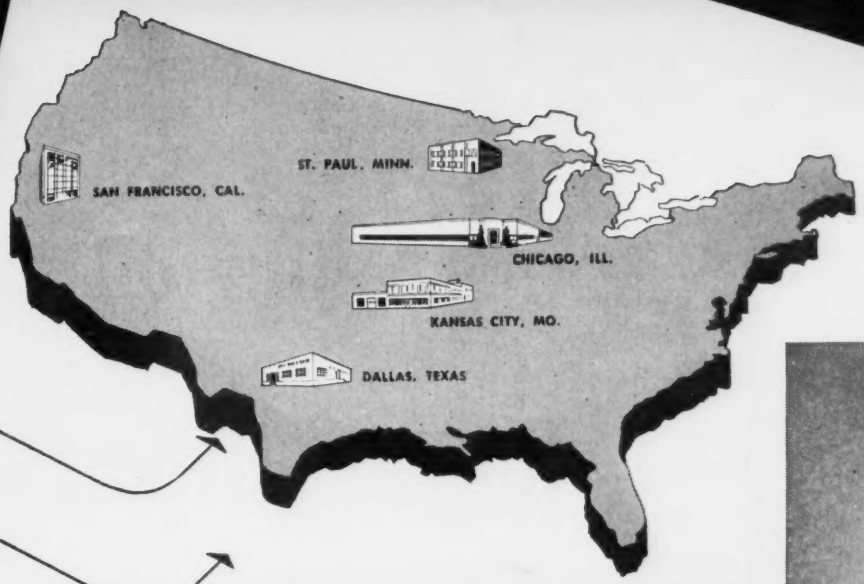


Automatic Constant Voltage Battery Charger! By adding the proper 3-phase FLOTROL to your exchange you can maintain full-floating operation, cut down running time on your rotary equipment, and save on your power bill. LORAIN PRODUCTS CORP.

Save Three Ways . . . on materials, man-hours, and maintenance with INDIANA STEEL & WIRE CO.'s Crapo HTL-85 and HTL-135 Line Wire. Galvanized by the famous Crapo Galvanizing Process, protected with heavy, ductile coating of zinc.



Time Proven—for 60 years Exide Batteries have been serving telephony! The Manchester positive plate with its button type construction provides long life . . use Exide Manchex for all your battery requirements ELECTRIC STORAGE BATTERY CO.



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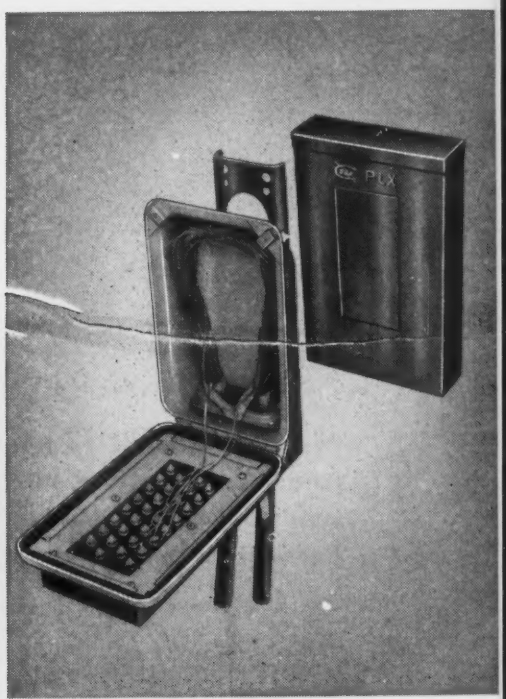
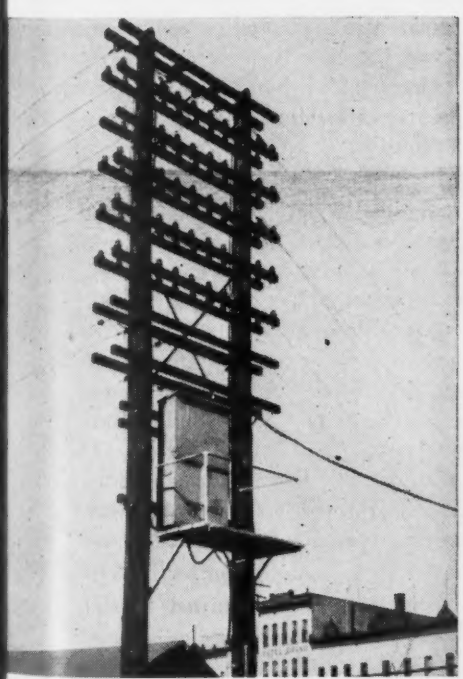
1663 Mission Street, SAN FRANCISCO 3, CALIF.
410 No. Syndicate Ave., "Midway Area", ST. PAUL, MINNESOTA
1515 Turtle Creek Blvd., DALLAS 2, TEXAS

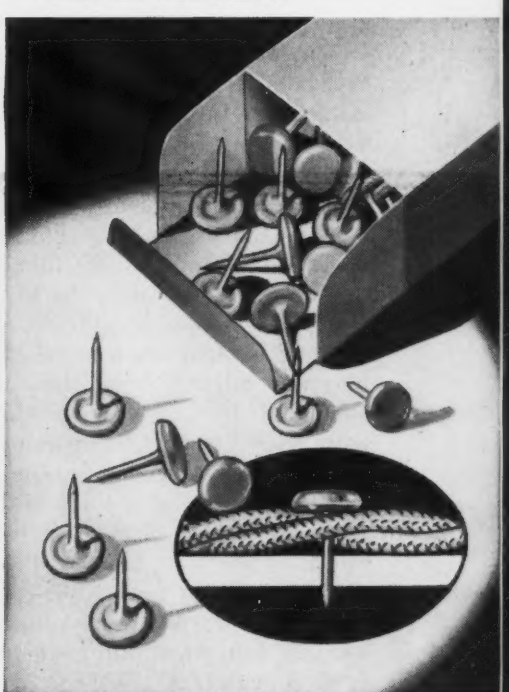


For Plastic Covered Cable — the new Cook P-L-X Cable Terminal is simple to install — designed for maintenance free operation. Front of unit opens down for working ease. No stubbing, no splicing, no potting makes it simpler and economical. COOK ELECTRIC COMPANY.



Economy in Overhead Construction is assured when crossarms made by the CONTINENTAL CROSS-ARM COMPANY, INC., are a part of your wire and pole installations. Fully seasoned American woods — built to sound standards of dependability.

Sealed Against Trouble! Communication equipment manufacturers demand Kester Plastic Rosin-Core Solder, because it makes a perfect seal. Prevents high-resistance joints and intermittent open-and-close circuits. KESTER SOLDER COMPANY.



Designed for Fastening Wire. Rhodes Inside Wiring Nails are made with special brads for easy driving. Fibre heads insure good insulating qualities—will not damage wire insulation. Nails colored to match insulation. M. M. RHODES & SONS CO.

FROM THE CAPITOL —

Washington Bureau Reports

By ROLAND DAVIES and FRED HENCK

Bell System seeks $8 million annual rise in tele-typewriter rates . . . Secretary of Commerce reports on administration's policies . . . Survey indicates 40.3% of nation's farm homes had telephone service in July, 1952.

NEW INTERSTATE teletypewriter exchange service rates, estimated to produce slightly under $8,000,000 a year in additional annual revenue on the present volume of business, and revised private line teletypewriter channel and equipment charges, resulting in about the present amount of annual revenues, have been filed with the Federal Communications Commission by the Bell System companies.

The revised rates will become effective July 1, "unless suspended by the Commission," the FCC said in its announcement of the filing.

Procedure followed by the FCC in making the announcement was similar to that used when revisions in interstate toll telephone rates were submitted by the Bell companies more than a year ago, in line with the "Charleston plan" of separations. The Commission, after study of those rates, permitted them to go into effect.

The filing was made after considerable data on costs of providing the services and other information had been provided to the FCC over a period of months. Earlier this year, the then FCC Chairman, Paul A. Walker, announced that the Commission was studying TWX and private line costs and rates of the Bell System companies. Mr. Walker declared at that time that the services are competitive with those of the Western Union Telegraph Co., and that rates charged should be compensatory for the costs of furnishing the service.

The FCC pointed out in its announcement that "The Bell System companies have recently completed a study designed to estimate their costs of furnishing the (TWX and private line) services. In considering the proposed rates, the Commission will take into account the results of the study."

In the letter of transmittal accompanying the new tariffs, American Telephone & Telegraph Co. Long Lines Department Commercial Operating Engineer M. G. Wallace said that "The increases in (TWX) charges are made because of the higher wages, taxes, and other operating costs of providing the service . . . . No increases in interstate rates have been made since the establishment of the service in 1931; on the contrary, substantial decreases were made in 1944 and 1946."

Regarding private line teletypewriter and Morse service rates, Mr. Wallace noted that the tariffs provide "for reductions . . . . in the rates of interexchange channels for changes to simplify the method of determining interexchange channel rates, and for increases in the monthly charges for certain items of private line teletypewriter station equipment. These teletypewriter machine rates have been unchanged since the charges for basic machines were reduced to the present level in 1939, and these increases are necessary to recognize rising costs. It is estimated that the revisions will reduce the interexchange channel charges by approximately $1-1/3 million annually, and will increase the station equipment charges $1-1/5 million annually, thereby resulting in a small reduction in revenue."

In addition to increasing initial period rates by five, 10, or 15 cents for most distances up to 2300 miles, the new TWX rates call for overtime rates of about 30% of the initial rate for each additional minute, compared to the present overtime charge of about 25% of the initial period rate. The tariff changes also would eliminate the present $10 monthly revenue guarantee per station, and substitute for it a $10 flat monthly charge per station. All charges for calls would be in addition to the $10 per station rate, in contrast to the present use of the minimum guarantee, to which the first $10 in calls is applied.

In its announcement, the Commission reported that there are about

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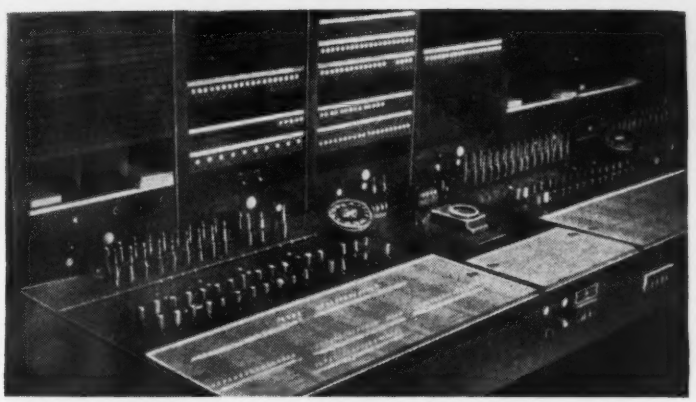

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INSTALLATION NEED

AUTOMATICALLY FIGURES TOLL TIME! With Calculagraph on the job, there is no need for time-consuming, service-slowing manual figuring of elapsed time. Calculagraph does it all quicker, easier and, most important, with complete accuracy.

ACCURATE TO THE SECOND! Calculations are accurate down to the last second. Authoritative and indisputable, they make it possible to collect all the revenue due on every toll call — a basic advantage in exchanges large or small.

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THE STANDARD OF ACCURACY SINCE 1892

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Please send copy of the new catalogs on automatic toll time calculating and recording.

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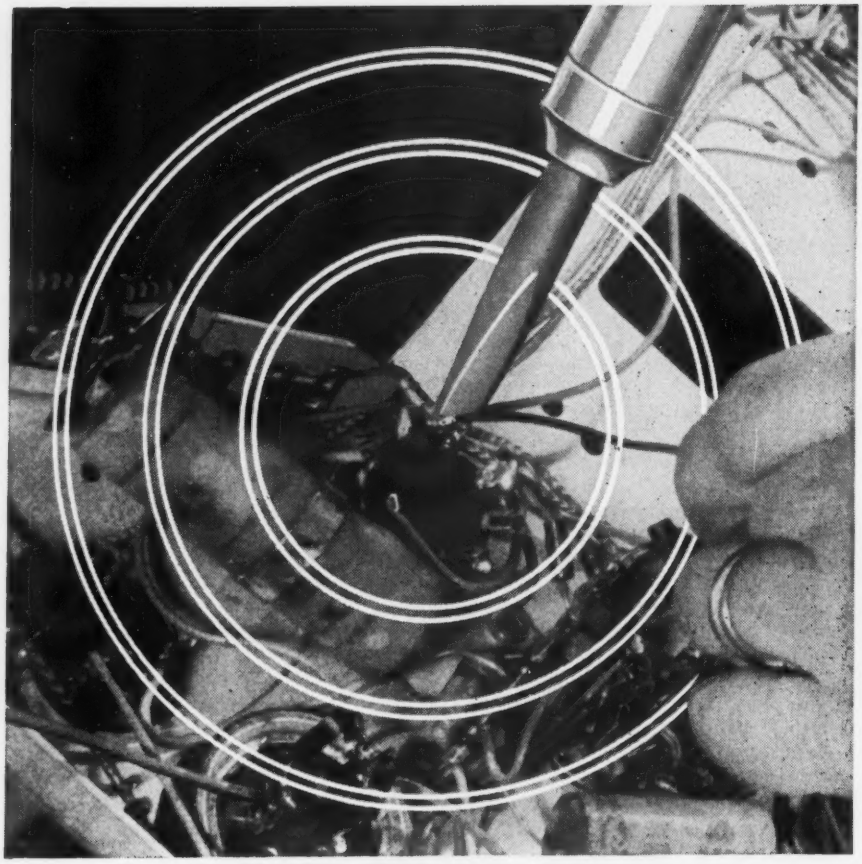

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for electrical conductivity and permanence!

SOLDERED connections eliminate loss of current, fire hazard, radio interference and excess heat which result from loose, corroded, arcing NON-SOLDERED connections.

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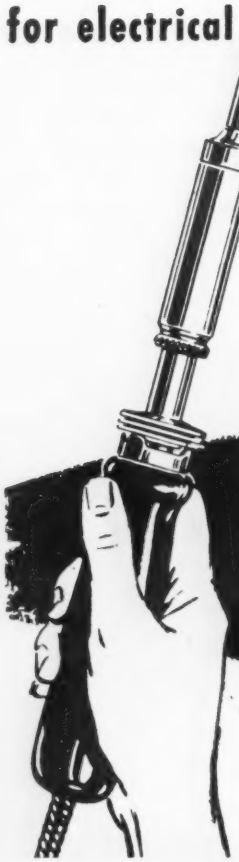

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15,000 TWX subscribers, with about 33,000 stations in operation, producing nearly $30,000,000 in annual revenues. It was said that the rate change will benefit Long Lines' rate of return by less than 0.2%.

Commerce Secretary Weeks Reports On Policies

IF REGULATED industries — including those providing communications, electric power, and gas transmission service, are to "render their full service to the nation, it is my judgment that the regulatory bodies must allow earnings adequate to attract and support the equity capital they can use effectively for economies, improvement, and growth," Secretary of Commerce Sinclair Weeks declared in an address to the American Iron & Steel Institute in New York.

Mr. Weeks, in a declaration of the new administration's policies in its relation with business, dealt mainly on what he classified as the public service industries, and emphasized the importance of their being granted adequate earnings by regulatory authorities.

Not only was Secretary Weeks' address important in itself because of its origin with a Cabinet officer, but he made it clear in his address that he was reporting the position of the Eisenhower administration.

"This administration believes that it is the intent of Congress in its approach to regulation to allow earnings which will make the system of private ownership work," the Commerce Secretary stated. "We know and you know that unless the companies rendering service are financially strong, forward-looking management cannot put in all the cost-saving devices and improved equipment that will best service the public. The constant wise expenditure of money for new and improved equipment is the way to progress, and companies with small earnings have neither the cash nor the courage to invest heavily in future improvements."

With adequate earnings establishing sound credit, such public utilities will be "able to obtain from the investing public any necessary borrowed capital," the administration official said. "Expensive hand-to-mouth policies can be discarded for

Western Electric installer in an aircraft plant connecting telephone equipment with a G-E soldering iron.

Western Electric Uses G-E Soldering Irons to Speed Vital Telephone Installations

For efficient soldering of millions of connections during the installation of telephone equipment, Western Electric uses G-E industrial soldering irons. Repeat orders testify to this company's satisfaction with G-E irons.

No matter what *your* soldering operation—intermittent or high-speed repetitive work—General Electric has the iron to meet your particular requirements. You'll find that G-E irons, equipped with the famous long-life Calrod* heating element, give you lower maintenance costs. You can choose durable, interchangeable calorized copper tips or, for even longer maintenance-free tip life, sturdy Ironclad copper tips. Ratings range from 25 to 1250 watts, tip sizes from ⅛-inch to two inches.

Give G-E industrial soldering irons a chance to prove their lower over-all costs to you. Buy a few through your nearest G-E Sales Office or Apparatus Distributor, and keep cost comparison records on their performance. You will see for yourself that these irons will save you money. General Electric Company, Schenectady 5, N. Y.

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You can put your confidence in—

GENERAL ELECTRIC

You can often replace heavy irons with this 120-volt, 60-watt lightweight iron for communications soldering.

BI-SEAL* SELF-BONDING INSULATING TAPE

for Moisture Proof Plastic Cable Splices

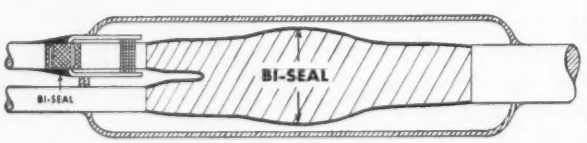
You can be sure that Bi-Seal self-bonding insulating tape will seal out moisture and provide high dielectric protection to all plastic wire and cable splices. In addition, Bi-Seal has outstanding aging characteristics both in operation and storage. Make sure your splices retain all the desirable properties of the original cable. Bi-Seal plastic tape is formulated from the same basic element as the cable insulation itself—polyethylene—a hygroscopic compound with an extremely low degree of moisture vapor transmission. Insure uninterrupted operation under all normal field service conditions. Moisture-seal aerial and direct earth burial cable splices with Bi-Seal—you'll find it outstanding at low temperature in application and in performance.

PERFECT MOISTURE SEAL... *"no matter how you splice it!"*

Plastic Cable to Plastic Cable.
Straight Splice—"Wrap Method."

Plastic Cable to Plastic Cable.
Straight Splice—"Lead Sleeve Method."

Plastic Cable to Lead Sheathed Cable.
Straight Splice—"Lead Sleeve Method."



Plastic Cable to Lead Sheathed Cable.
Branch Splice—"Lead Sleeve Method."

For abrasion resistance, it is recommended that a jacketing tape be applied over the splices illustrated above.

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long-range programs which will give the country better service and lower costs and make provision for national emergencies.

"I say without hesitation that it is essential to the welfare of the country that the regulated utilities be regulated in such a manner as to enable them to attract all the capital that they can use in making economies and improving service."

Scoring the past 20 years of Democratic rule, Mr. Weeks told i hs audience that "competitive enterprise has been loaded down by heavy and badly-conceived taxes. It has been faced with government competition in an increasing number of fields. It has seen its solemn contracts revoked by a federal agency. It has been threatened with punitive action again and again by bureaucrats.

"I'm here tonight to assure you that spirit has changed with the change in administration."

Secretary Weeks stated that the "laws that Congress has passed for the regulation of the railroads, interstate power, gas transmission, and communications are all intended to keep those industries healthy and vigorous so that they can render the best service possible to the public at as low a cost as possible in the long run . . . .

"When regulation departs from its traditional role and encroaches on the field properly allocated to management, it may well slow down the progress and development of the industries being regulated."

No group has been "more unwisely and unfairly treated than the service industries," Mr. Weeks commented. "Yet the railroads, the power and light, the gas industries, and those furnishing communications employ millions of workers, dependent for livelihood on the success of these industries, which are vital to all other industry and to the general consuming public . . . . .

"If we want service from a service industry, a full diet — in terms of income—is clearly to be desired . . . . In regulating utilities and in managing other things, it is cheaper for the public in the long run to have those that serve it well-fed and strong, rather than half-starved and weak. There are ways of getting good service out of the strong. No one can get it out of the weak."

Mr. Weeks said the "condition of

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It happens as quick as the blink of an eye. The instant your normal power supply fails a Homelite automatic standby power system goes into operation. You're never completely out of power for more than a split second. You keep going . . . you maintain service . . . regardless of the emergency.

That's just one of the many features Homelite offers in standby systems . . . automatic starting as well as manual starting. In addition to permanently installed systems, Homelite offers you, in a wide range of power outputs, carryable units that can be rushed to outlying relay stations.

Write, specifying your requirements and our engineers will gladly recommend a Homelite Generator best suited to your needs.

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SCREW ANCHORS

have a KING-SIZE Thimbleye

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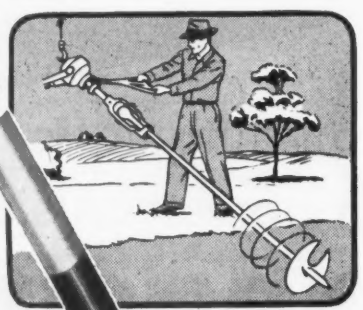
Have you tried installing Chance Screw Anchors by machine? It's fast . . . it's economical . . . and it's simple—the oversize Thimbleye on Chance Screw Anchors will readily fit into an adapter that you can get for your hole boring machine. Machine installation saves many costly man hours on big line construction jobs and also solves the installation problem in areas where it is difficult to install screw anchors by hand.

This same "king-size" Thimbleye gives ample room to insert a turning bar big enough for extra leverage in hand installations.



ONE PIECE DOUBLE ARC WELDED ALL STEEL

Chance Screw Anchors consist of separately formed drop-forged steel Thimbleye anchor rods, and helixes with strong, sharp, structural steel blades that are double arc welded (top and bottom) to form an anchor that goes down fast and has exceptional holding power. Blades are correctly pitched to take the right "bite" into the earth for installation with a minimum of effort and earth disturbance. The single groove in the strand-protecting Thimbleye prevents overloading the anchor in regular installations, but a Tripleye rod, for two or three guy strands, is available at no extra cost for special jobs.

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the utilities is a part of the mess that this administration has inherited. Unless we also are willing to drift into calamity, we must assure the credit of the vital service industries so that in the long run they can serve us economically and well."

Declaring that "industry generally, due in considerable part to tax laws presently in vogue, leans more to borrowed money than to equity capital — a comparatively recent development hardly to be welcomed," the Secretary said "The evidence is clear that if there were some assurance that regulation would not either by delay or refusal prevent earnings sufficient to attract capital, we might reasonably expect the railroads, for example, to greatly increase their yearly expenditures for plant."

The government official quoted a report by the National Association of Railroad & Utilities Commissioners which pointed out that 25 years ago "we had the greatest government prosecution of regulated industries ever undertaken — the holding company investigation — and the evil it found to reform was that the business had too much debt and was controlled by too little stock. The report goes on to point out that now the commissioners are agreeing to or advocating what was then condemned — too much debt and too little equity."

Mr. Weeks quoted the NARUC report: "The financial dangers of high debt ratios, the importance of good service to the public, and the inevitability of service breakdowns following on the heels of financial breakdowns, have again become matters for serious reconsideration."

He added, "This is a very courageous document of the committee of state commissioners. It should have a salutary effect on state regulation. It is also incumbent on the federal government to see that its regulation recognizes the facts with equal clarity."

The Cabinet member declared that "If we want this fundamental segment of American economy (the public service industries) to do its full part in the free world, we shall have to give it a fair break . . . . If we encourage industry generally and particularly work to stimulate the 25% of our free economy, which is the service industries, we shall surely

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You take the guesswork out of truck buying when you buy International trucks. They are proved all three ways to give you the performance you want at the *lowest* cost:

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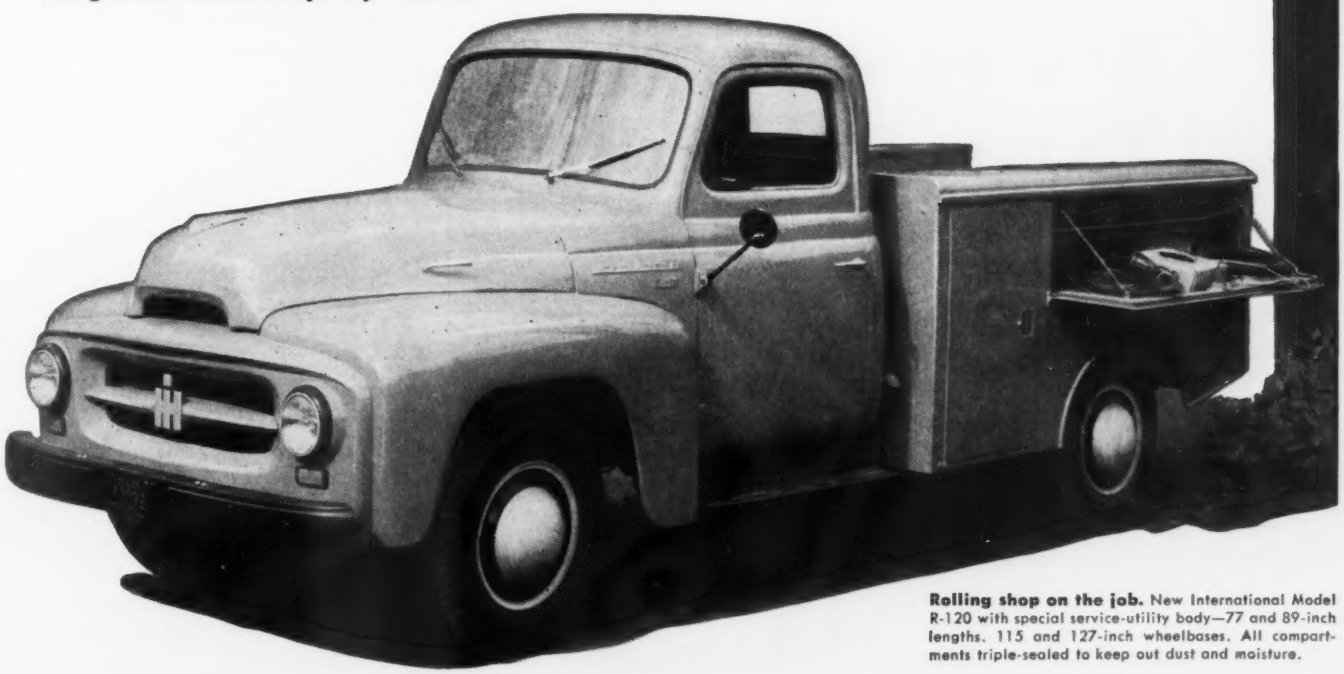
Select the International That's Right for Your Job from America's Most Complete Truck Line.

168 basic models from ½-ton to 90,000-lb. GVW rating . . . 307 new features . . . 29 engines, with widest practical choice of gasoline, LPG or diesel power, available to give the right power for the job . . . 296 wheelbases . . . Transmissions and axle ratios to meet any requirement . . . Thousands of variations for exact job specialization.

INTERNATIONAL HARVESTER COMPANY • CHICAGO



Rolling shop on the job. New International Model R-120 with special service-utility body—77 and 89-inch lengths. 115 and 127-inch wheelbases. All compartments triple-sealed to keep out dust and moisture.

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"Standard of the Highway"

"No decay in this pole and it's over 31 years old,"

says J. W. Schultz of Grenada, Miss.

• "This Koppers Pole is in such good shape," continues Mr. Schultz, "I'm sure it will give good service for many more years."

This is the kind of pole service that brings substantial savings to utility companies. Savings in maintenance costs. Savings in replacement costs.

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put off the day when we have to have recourse to emergency public works and other artificial stimulants. And this is especially true when considering that public works cost taxpayers money and the capital attracted to the utilities pays taxes instead of adding to them."

Defense Dept. Directive

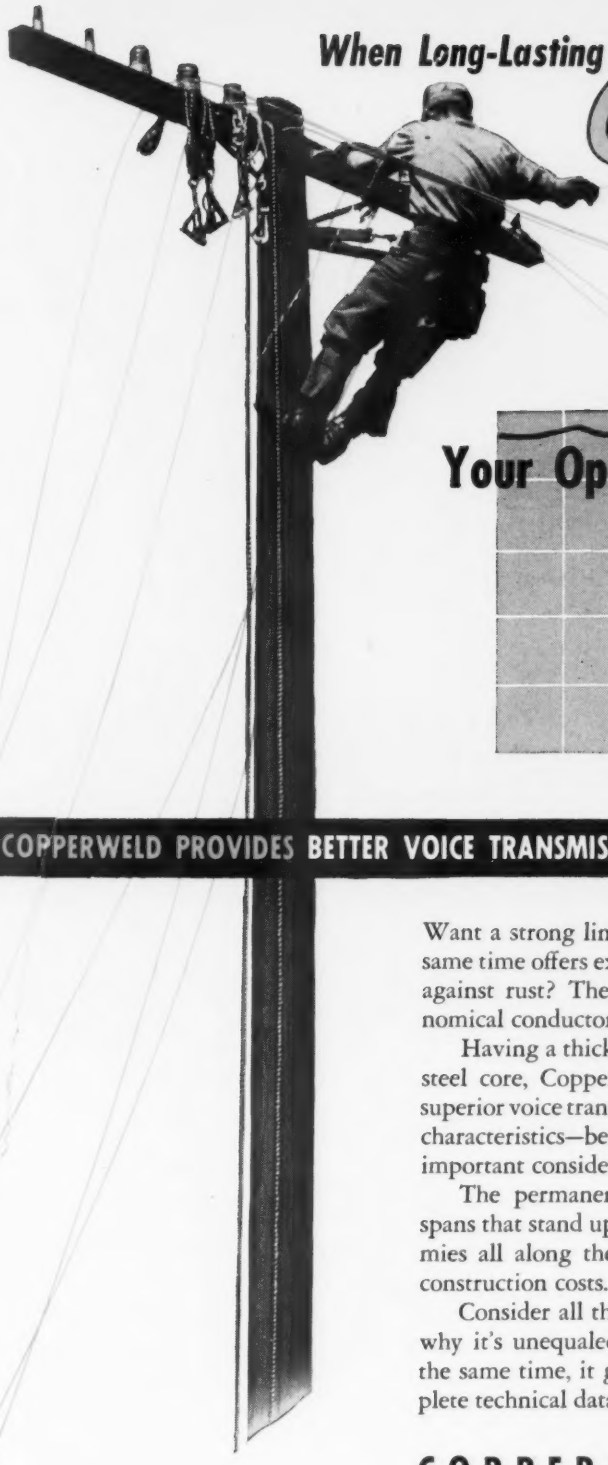
ONE RATHER surprising statement of policy has come from a segment of the federal government — the Department of Defense. It is surprising principally because it was issued before last fall's election, although it somehow escaped notice even within the government and has just come to light.

The directive, aimed at establishing a Department of Defense policy "which will effect maximum economy and efficiency in the provision of administrative telephone service on military posts, camps, stations, bases, and installations," orders military authorities to "make all practicable utilization of the facilities and services of commercial telephone companies to the extent that such are reasonably and adequately available on a lease and rental basis."

Accordingly, the directive states, "no funds may be obligated by a military department for the purpose of providing a government-owned and maintained administrative telephone system" on a military installation without prior authorization of the Secretary of Defense.

REA

ALTHOUGH the question of whether the Rural Electrification Administration (REA) will get an additional $15,000,000 for farm telephone loans in the remainder of the current fiscal year had not been settled as these lines were written, it made little practical difference. It has been made clear that REA will get a total of $65,000,000 in new telephone loan authority through the end of fiscal 1954, one way or another. A total of $50,000,000 is on the way through Congress now for the next fiscal year, and in all probability the $15,000,000 will be added if it is not endorsed for the current fiscal year in a supplemental appropriations measure.



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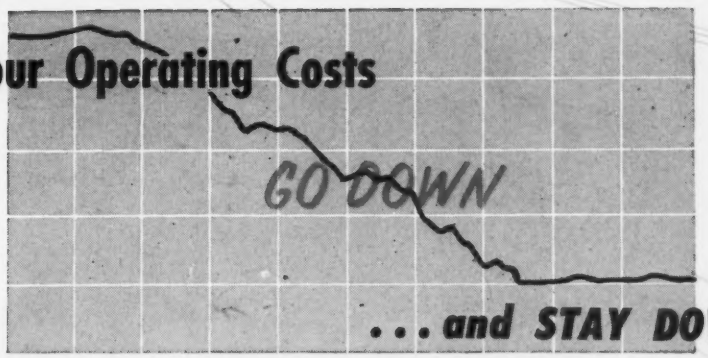
GOES UP...



COPPERWELD PROVIDES BETTER VOICE TRANSMISSION THAN ANY OTHER HIGH-STRENGTH CONDUCTOR

Want a strong line wire that really cuts your operating costs and at the same time offers excellent electrical conductance plus complete protection against rust? Then you want Copperweld* Line Wire—the most economical conductor for all types of communication and signal lines.

Having a thick layer of copper inseparably molten welded to a strong steel core, Copperweld Line Wire provides the ideal combination of superior voice transmission with the strength of steel. Its voice transmission characteristics—better than any other high-strength conductor—are an important consideration in keeping customers satisfied.

The permanent high strength of Copperweld permits safer long spans that stand up under severe operating conditions. This means economies all along the line. You save on poles, hardware, accessories and construction costs.

Consider all the advantages of Copperweld Line Wire and you'll see why it's unequaled for long life and dependable performance. And, at the same time, it gives you lowest annual cost. Write us today for complete technical data.

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Glassport, Pa.
SALES OFFICES IN PRINCIPAL CITIES

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STRONG, NON-RUSTING

Costs Less... because it lasts longer!

SOLD BY LEADING DISTRIBUTORS

Is Her Name "Miss Advertising?"

Your directory advertising may be out of step, if the size of your directory fails to reflect the growth of your service area. More and more managers report that directory advertising can be built to the point of being an important source of increased revenue. You are invited to find out how to increase your directory advertising and receive public relations benefits. There's no obligation on your part. Just call Loomis.

KNOW-HOW TO SOLVE YOUR DIRECTORY PROBLEMS

• 724 cities and towns in 22 states are served by the 287 directories that retain Loomis services.

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GraybaR TELEPHONE NEWS

AND POLES ½ A MILE AWAY!

More than 2000 wires terminated here on the roof of the Boston telephone office building in 1883. From this structure, wires often swung free for one-half a mile before reaching the nearest pole – a system highly vulnerable to snow, sleet, and ice. Years of combating conditions like these, however, helped develop the well-known line of Hubbard pole-line hardware – hardware that's truly *experience-engineered.* For rugged, dependable items – from eye bolts to transposition brackets – Graybar reminds you to "hang the load on Hubbard."

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It really makes little difference – there's an anchor designed to do a quick, sure holding job in any soil classification. And . . . you can get the type best suited to your own local needs from one of 109 strategically located Graybar offices and warehouses across the nation.

WITH JUST ONE ORDER— THE REST OF YOUR NEEDS!

These are just a few of the thousands of telephone items available from Graybar. A pioneer supplier of equipment to the independent telephone industry, Graybar offers prompt service on everything from the bottom of the hole to the top of the pole.

Your local Graybar Representative is anxious to make your order his personal responsibility – be sure to make your next order read "Via Graybar."

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IN OVER 100 PRINCIPAL CITIES

North Pushbutton Key and Lamp Box.

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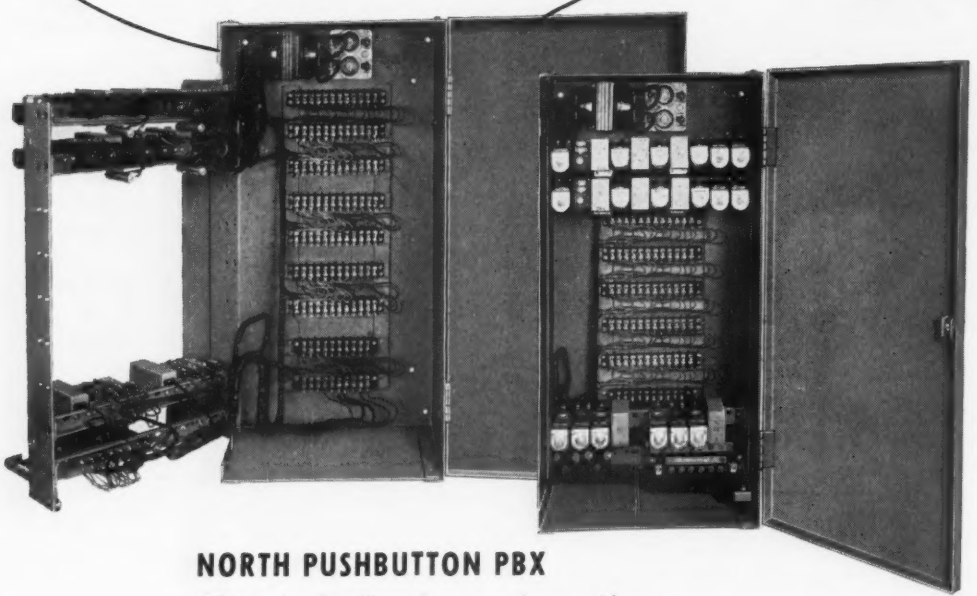

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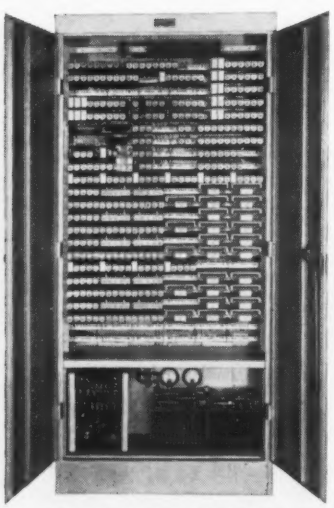
A key system for offices, shops, even large residences, where the maximum needs will not exceed 6 trunks and 20 stations. Trunk or loop units easily added to initial service. Provides buzzer and lamp signaliing. Can be connected to either automatic or manual common battery type central exchanges.

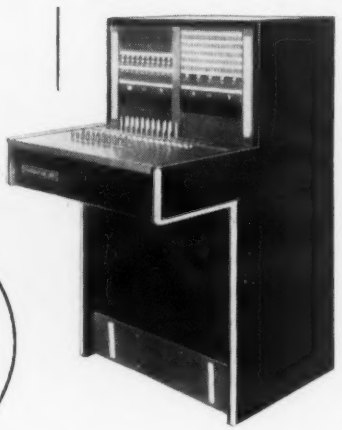
with

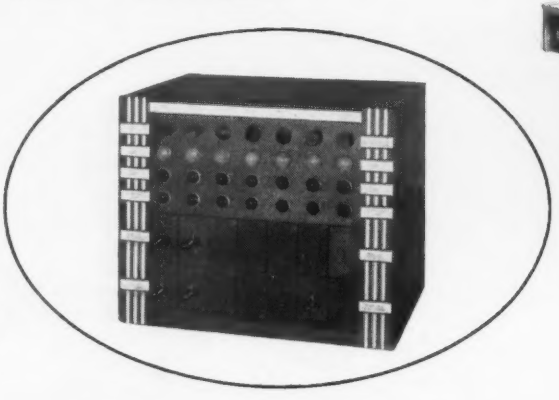
N NORTH



NORTH ATTENDED PABX

Console or full multiple types.





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Ideal wherever it is desirable to have a part time attendant intercept and extend incoming calls and to provide local information. Capacity thirty lines. Automatic All-Relay equipment occupies minimum floor-space. Cordless turret cabinet requires less desk space than a typewriter, or may be placed on desk-side brackets. Connects to any type of central office.

"Internal Revenue"

...from Commercial and Industrial trunks

Within the walls of industrial and commercial plants served by telephone companies everywhere are many opportunities to "up" the earning power of these worthwhile accounts.

Companies grow just as communities do. Service that is adequate today may leave something to be desired tomorrow in the way of communications within the plant. This internal need spells additional revenue for companies taking the pains to show such subscribers the many benefits from a complete PBX system based upon modern automatic equipment.

To assure yourself the greatest ratio of take-to-bank earnings, go after more PBX business now. Be sure you do it with the best, low-maintenance cost equipment. Remember that you can offer the best commercial service equipment, from pushbuttons for two up to fully automatic switching of a thousand lines . . .

NORTH *All-Relay* PABX

THE NORTH ELECTRIC MANUFACTURING COMPANY

Originators of ***ALL RELAY*** *Systems of Automatic Switching*

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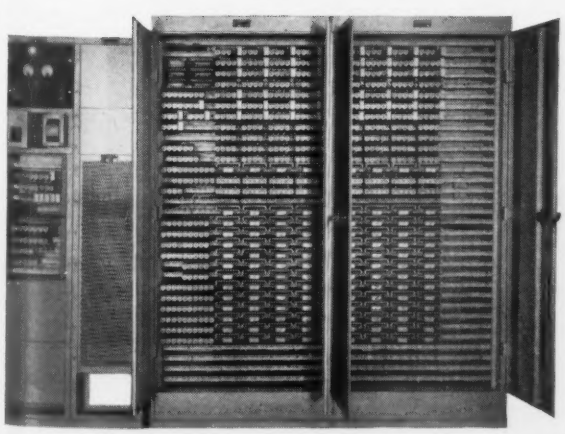
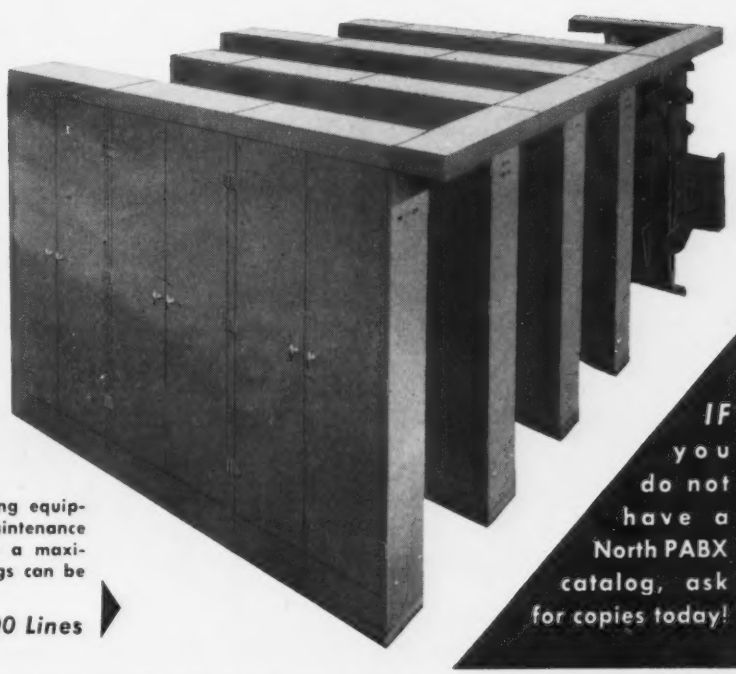


NORTH FULL-MULTIPLE PABX

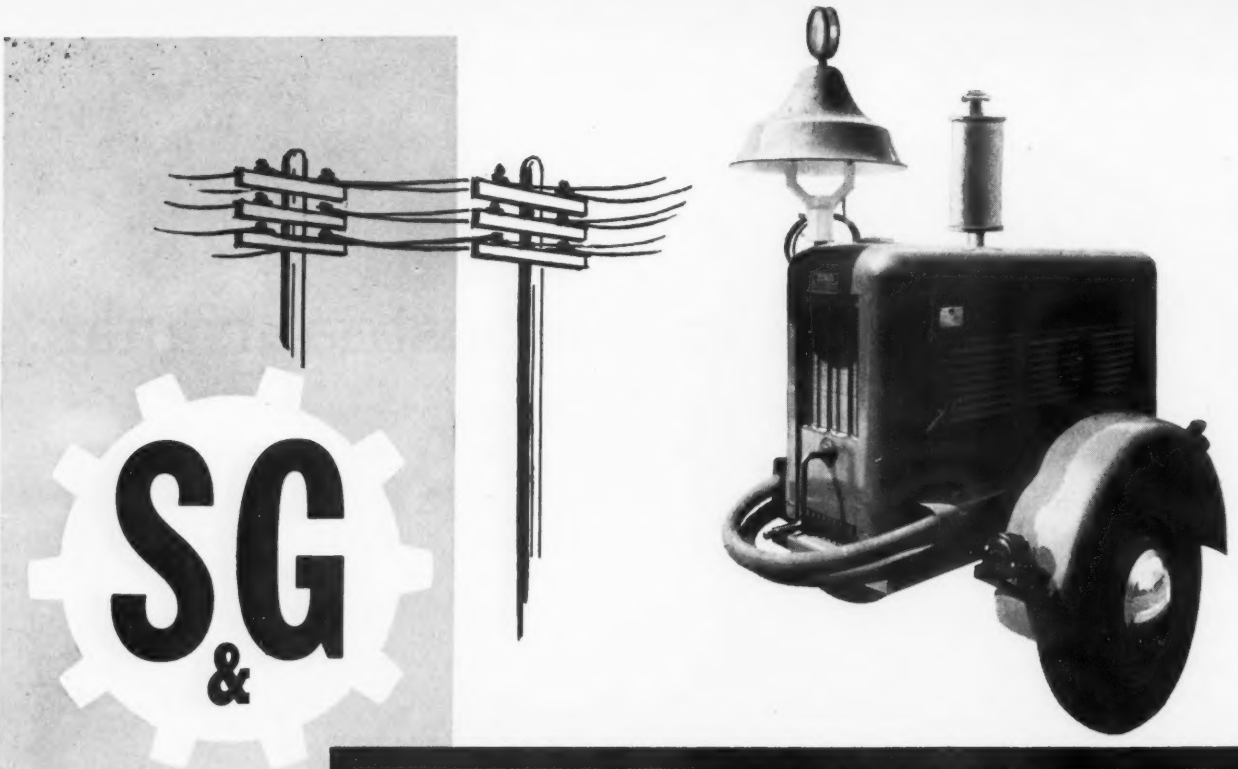
Where traffic requires operator attendance, and expansion of the system is anticipated, North Full-Multiple equipment should be used. Available in capacities from 30 to 1,000 lines. North

Automatic All-Relay switching equipment requires so little maintenance and servicing attention that a maximum ratio of profit to billings can be expected.

30 to 1,000 Lines

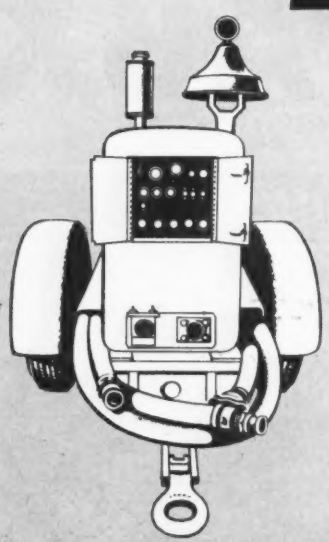


IF you do not have a North PABX catalog, ask for copies today!



S&G

MOBILE POWER UNIT



The S & G mobile power units are totally enclosed—can be operated without removing the side panels.

Designed for telephone, telegraph, power companies, and sewerage and water departments — where portable power and pumping is required.

For use by telephone cable splicing crews, for lighting, operating solder pots, solder irons and electric blowers for ventilating manholes, with a centrifugal or diaphragm pump to keep the manholes dry. There are numerous other features of the mobile power units, all of them especially designed for company jobs and problems. The units are light, easy to handle, and very quiet in operation.

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EDITORIAL

What Goes Up Comes Down

IT IS KNOWN to telephone company managements, to commissions, and to laymen interested in the matter, that a considerable part of the large amounts of financing that must be done by telephone companies in the future must be done by the sale of capital stock.

It is obvious, as has been pointed out many times by speakers, writers and others, that no large amount of stock financing can be done by telephone companies unless commissions allow the companies to make net earnings sufficient to pay dividends that are attractive to investors.

As has also been pointed out many times, the stocks of utility companies, including telephone companies, do not have the speculative attraction of many industrial company stocks. The purchaser of corporate stocks who selects the stocks he buys because he thinks they are going to advance substantially in price, is not likely, for the purpose of making capital gains, to be much interested in the stocks of utility companies.

How right he would be on that score is shown by some figures we have seen which give a general idea of the comparison, as to speculative value, of industrial and utility stocks.

From 1940 to late 1951, according to these figures, a selected list of a number of the principal industrial company common stocks increased in market price about 125%. During that same period the market value of utility company common stocks, including telephone, increased about 25%. The increase in the market value of telephone stocks was the smallest of all.

On the face of it, this is a discouraging picture with respect to utility stocks. And it must be admitted that the present price level of utility stocks — and especially telephone stocks — is not sufficiently high to be in keeping with the inflationary situation existing today.

But there is a brighter side to this matter of the market price of utility stocks.

This side becomes apparent when there is a break in the stock market. An illustration is the market slump of October, 1951.

In that slump, industrial common stocks dropped 8.89 points. Railroad stocks fell 3.87 points. But utility company stocks fell only .88 points.

Or take a more recent case: In the first week of the April, 1953 market break, industrials lost 7.30 and rails fell 4.83. But the loss in utility stocks was only 1.08.

In such antics of the stock market there is, we think, half the answer to this proposition of financing telephone growth by the sale of stock.

There are millions of people in this country who have some amount of money — small or large — to invest. But they want to invest it; not speculate with it.

The utility stocks, and particularly telephone stocks, provide for them an investment which moves relatively slowly, either up or down in market price. With such investment, they do not need to keep their eyes glued to the "Wall Street Closing" in their afternoon paper. Nor are they seriously affected by the short-term and lop-sided thinking of day-by-day traders who fall over themselves to sell stocks when we get into a war — and fall over themselves just as rapidly to sell when there is a chance that peace may come.

Utility stocks — and particularly telephone stocks — meet the needs of these investors better than any other type of equity securities.

That is a situation which, we believe, could be made known better to many small investors.

We have said that this is half the answer to the proposition of telephone companies financing by the sale of their stocks. The other half of the answer is the obvious necessity that regulatory commissions allow the telephone companies to make enough net earnings to pay satisfactory and even attractive dividends on the stocks they have outstanding, and on those they must issue to obtain the new money they must have if they are to meet public demands for telephone service.

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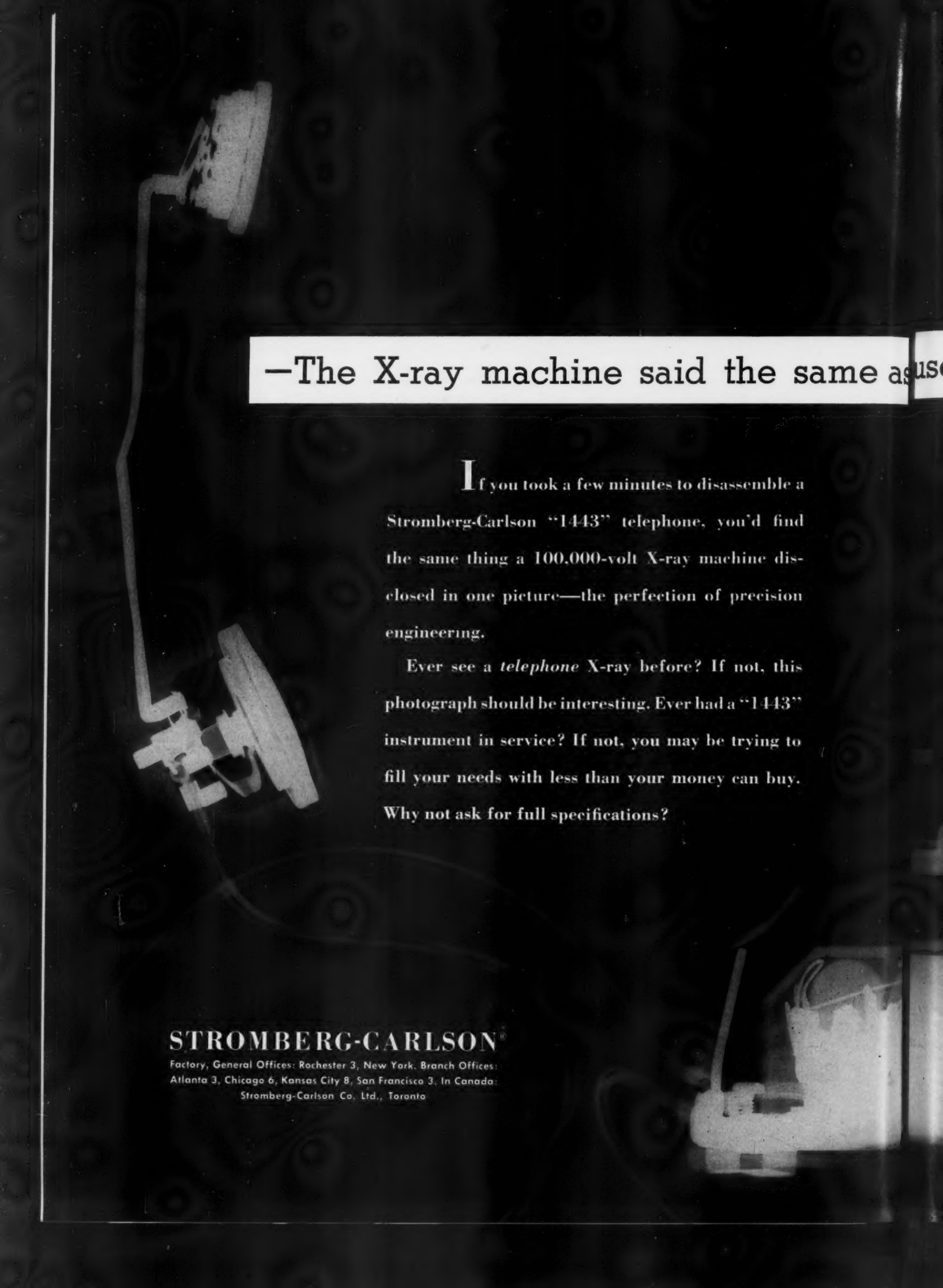


—The X-ray machine said the same as us

If you took a few minutes to disassemble a Stromberg-Carlson "1443" telephone, you'd find the same thing a 100,000-volt X-ray machine disclosed in one picture—the perfection of precision engineering.

Ever see a *telephone* X-ray before? If not, this photograph should be interesting. Ever had a "1443" instrument in service? If not, you may be trying to fill your needs with less than your money can buy. Why not ask for full specifications?

STROMBERG-CARLSON®

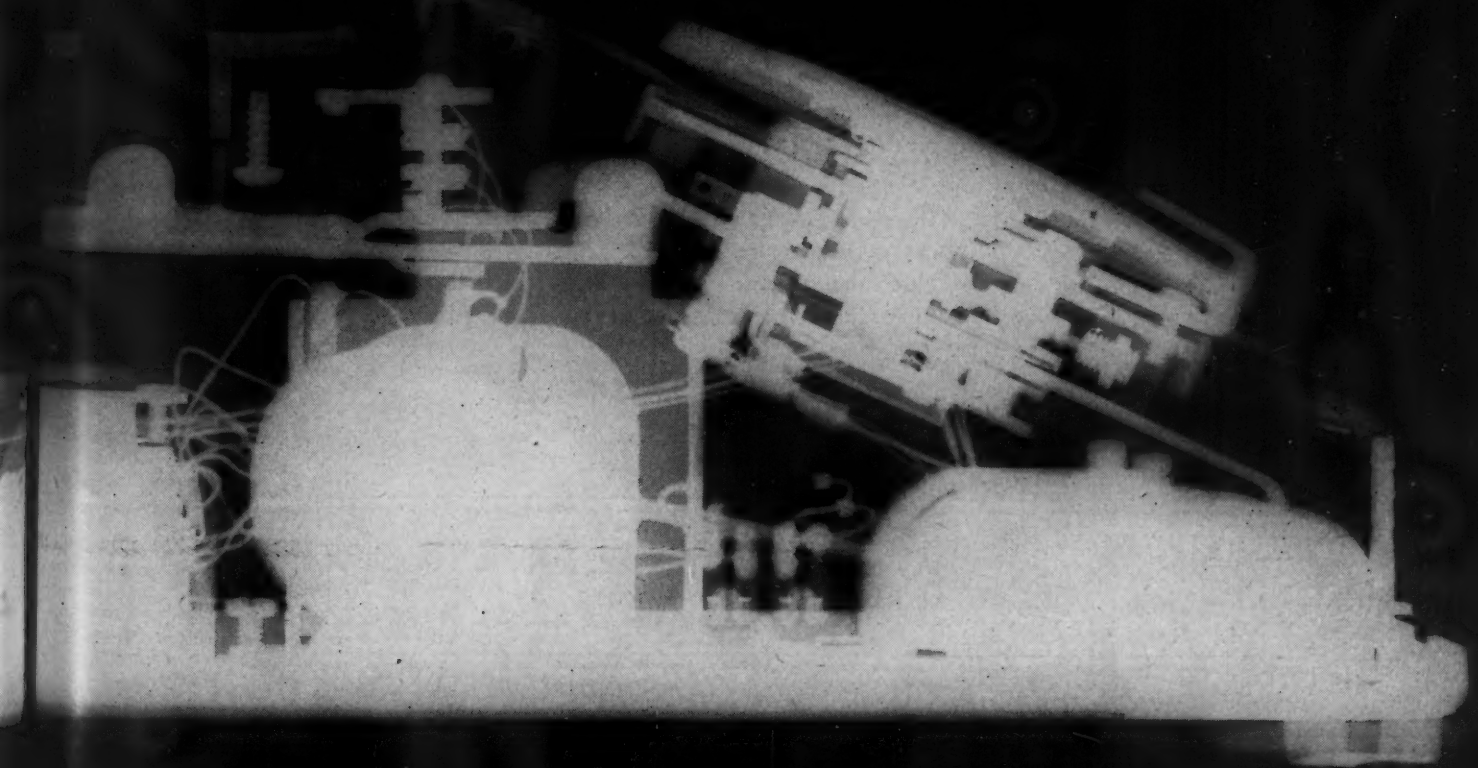
Factory, General Offices: Rochester 3, New York. Branch Offices: Atlanta 3, Chicago 6, Kansas City 8, San Francisco 3. In Canada: Stromberg-Carlson Co. Ltd., Toronto

Can you read an X-ray well enough to spot these "1443" features?

- A coil-and-capacitor assembly completely impregnated with *hydrolene*, to resist humidity.
- Capsule units in transmitter and receiver—which make *positive* contact even when only partially tightened.
- Two *separate* spring assemblies in the hookswitch—one for contact only, the other for restoring the plungers.
- Handset and line cords with nylon outer braid over vinyl insulation—really tough!

as users say:

Condition Perfect!



Introducing . . .
a NEW *Nylon Jacketed*
Distributing Frame Wire
with SEMI-RIGID PLASTITE INSULATION

It's WHITNEY BLAKE
22 DFN **TELEFRAME** ®

. . . a new concept in Distributing Frame Wire with these improved features at lower cost:

- **Superior insulation resistance**
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- **Easy to pull**
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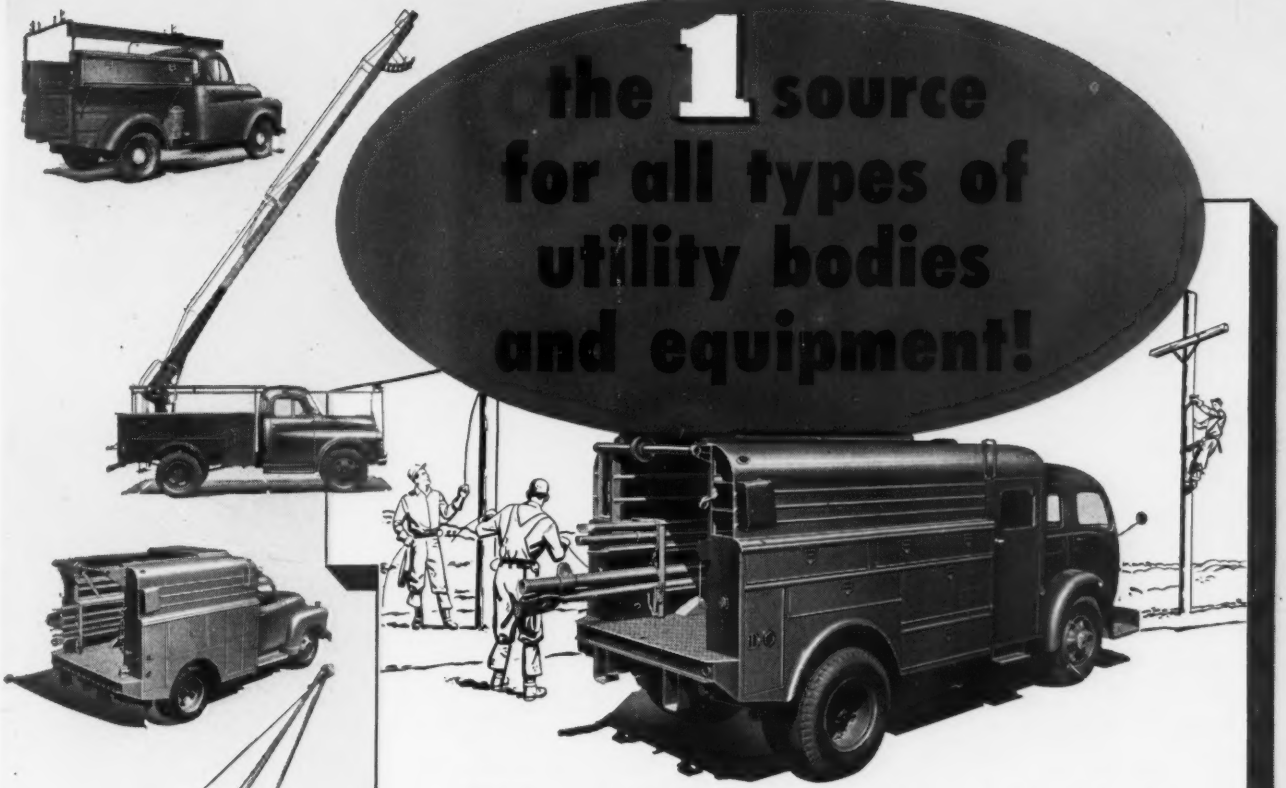
This wire is available in twisted pair and triple styles with #22 AWG tinned copper conductors. Insulated with semi-rigid Plastite insulation color coded black and white or red and white for twisted pair; black, white and red for triple. Jacket is of transparent nylon.

For low cost, easy handling, long service, use Whitney Blake 22 DFN Teleframe for all your distributing frame wiring needs.

WELL BUILT WIRES ®
SINCE WB 1899

WHITNEY BLAKE COMPANY
NEW HAVEN 14, CONNECTICUT

the 1 source for all types of utility bodies and equipment!



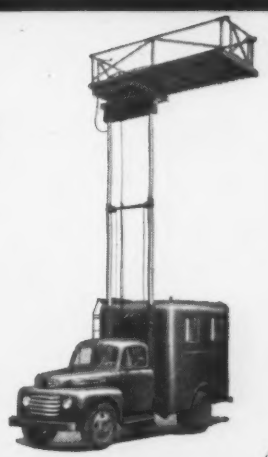
Whatever your utility body needs may be . . . from a set of compartment sections for a pick-up truck to a line body capable of handling the largest construction job . . . there's a POWERS-American Body designed to meet your requirements.

Available for construction, maintenance, and service work in all phases of the public utility industry, POWERS-American Bodies are "job-engineered" to step up crew efficiency and lower operation costs. Their quality construction guarantees long life and trouble-free service.

Whether your needs be large or small, standard or special, you'll find it a real economy to call POWERS-American . . . the 1 source for all types of utility bodies and equipment.

Look at all the features you get in POWERS-American Bodies

"Job-engineered" design • Equalized load distribution • Extra large weathertight compartments • Triple-seal compartment doors • Recessed slam-action door catches, with cylinder locks keyed alike • Additional line body features include: low-positioned rubber goods compartment • Full-size compartments on street side • Derrick stowed without interference to cab door or loss of compartment space • Extra depth in all compartments • Horizontal compartments for long material.



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PUBLIC UTILITY BODIES AND EQUIPMENT

McCABE POWERS AUTO BODY CO., 5900 N. BROADWAY • St. Louis 15, Mo.

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BRAMBLE-WEEDICIDE

(Powerful Pentyl Esters of 2,4-D & 2,4,5-T)

Preferred for Right of Way Clearance

Reading Time: 48 Seconds

BRAMBLE-WEEDICIDE, because it contains pentyl esters, gives you more killing units per gallon than old-fashioned 2,4-D and 2,4,5-T compounds. BRAMBLE-WEEDICIDE not only is more effective, it actually costs less per gallon.

Whether you prefer foliage spray or year 'round basal bark application — for control of hard or soft woods or brush — BRAMBLE-WEEDICIDE is your best buy. Saves you money on material and labor costs per mile of right of way clearance.

This is proven by exhaustive field tests . . . confirmed by the experience of scores of dollar-wise utilities on hundreds of thousands of miles of right of way. Write for prices, literature and names of satisfied users.

WHAT EVERY UTILITY MANAGER SHOULD KNOW

Station Paper 12, prepared in cooperation with Soil Conservation Service, U.S.D.A. reports latest techniques in chemical right of way clearance. Write for it.

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First Name in Brush Killers

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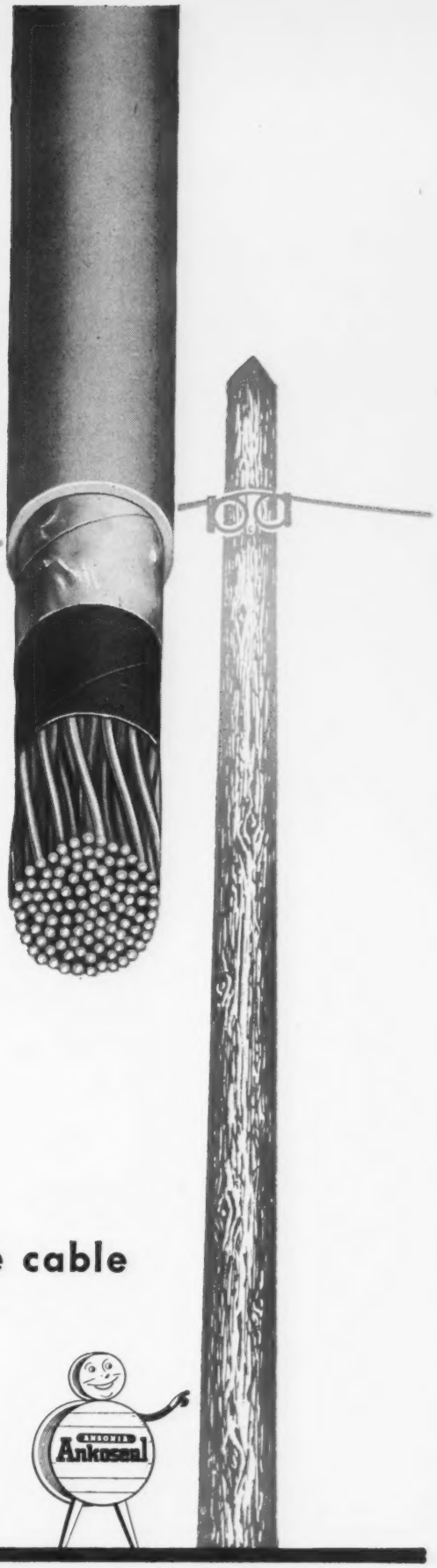
there's always a FIRST



. . . and in the independent telephone field Ankoseal was *first* with all-plastic cable. It was the *first* to lower the cost of installation, to use less materials, to be weatherproof, electrically superior, resistant to chemicals, and virtually moisture-proof. These "firsts" have withstood the test of time.

ANSONIA Ankoseal®

the FIRST all-plastic telephone cable

They are the result of sound design and quality construction. Make your next job Ankoseal. Write or phone today for detailed information.

THE ANSONIA WIRE & CABLE COMPANY

Successor to The Ansonia Electrical Company

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PEATROPHONE

The Telephone-Answering service that delivers the subscriber's own *Personal* message . . .

From the point of view of the calling party, a telephone-answering service that delivers "canned" messages is like a penny slot machine that hands out printed "fortunes"." It carries no ring of authority and leaves the caller unsatisfied.

Peatrophone is not merely a message-*taking* machine. It is a "mechanical secretary" that provides a personalized secretarial service 24 hours a day. Peatrophone is the only instrument available to independent telephone companies, *that will record the subscriber's own message at any time, to fit any situation.*

Through Peatrophone, the caller receives a personal message. He hears the subscriber's own voice — telling where he can be reached, what time he will return, or any other pertinent information. Because *Peatrophone messages are recorded by the subscriber,* they give the impression of personal attention.

Your Peatrophone equipment will *stay sold* because it satisfies the caller's need, and therefore performs the very service the subscriber is seeking!

Why invest in equipment that will do less?

TELEPHONE ANSWERING & RECORDING CORPORATION

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Telephone Executives Meet In Chicago

By JOHN G. REYNOLDS

"5,291 Independent telephone companies serve 8,642,400 stations through 10,974 central offices . . ."

USITA Executive's Conference featured discussions of — "the service job, toll compensation, adequate rates and REA's rural telephone department . . ."

INDEPENDENT TELEPHONE company executives took time out last month, told employees to keep things humming, packed their bags, and headed for Chicago's famed Edgewater Beach Hotel. There, for two days (May 25-26), the operating heads of the nation's 5,291 Independent telephone companies became active and interested participants in the most helpful and constructive Executive's Conference ever conducted by the United States Independent Telephone Association (USITA).

The executives discussed many things — the service job, toll compensation, regulatory problems, adequate rates, REA's busy Rural Telephone Department, management goals. They heard discussions of the problems facing the managements of telephone companies. Through debate and informal discussion, the executives found answers to some of the more complex problems and obtained a broadened and improved perspective to guide them through the days that lie ahead.

"The Days Ahead"

PROMPTLY at 10:15 on the morning of May 25, Edwin M. Blakeslee, USITA president and president of The General Telephone Co. of California, Santa Monica, called to order the first conference session.

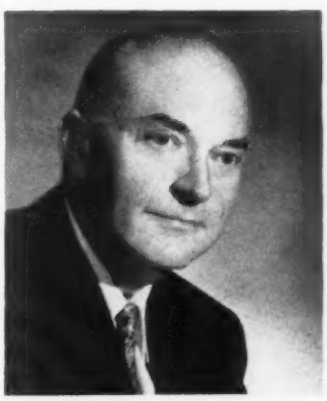
Fixing his microphone in place, President Blakeslee faced the packed Conference room and expressed his pleasure at the "heavy registration" of executives of Independent operating companies, manufacturers and suppliers, and officers of state telephone associations.

"Our Independent telephone companies," he said, "are a vital part of the economy of the country. These companies, 5,291 in number, now serve 8,642,400 stations through 10,974 central offices, utilize the services of 94,500 employees, have an aggregate plant investment of $1,354,000,000 and enjoy gross revenues of $400,000,000. More than 100,000 stockholders have entrusted their savings to Independent telephone companies . . ."

Pointing out that the Independent telephone industry is being well served by the USITA, President Blakeslee gave full credit for the organization's accomplishments to its full-time officers and employees "whose talents and loyalty are devoted to the service of Independent telephony . . ."

"Credit," he said, "should also go to members of the Association's committees who are contributing their time, ability and technical know-how to the many problems of common concern to Independent companies . . ."

Referring to some of the important



"Another duty we have to perform as a part of the job that lies ahead is that of telling the story of Independent telephony to the American people."

—E. M. BLAKESLEE, USITA President

Mr. Blakeslee mentioned several pieces of legislation which have received the attention of USITA's Washington office.

Commenting that he was doing a "little bragging about our Association," Mr. Blakeslee emphasized — "I am doing it because it deserves to be done, and because I think you are entitled to know just how much a constructive and effective force your organization is."

"Another indication," he said, "of the alertness of those who are watching matters of national concern for us is to be found in what was done in connection with an article entitled '5,000 Ways To Make a Telephone Call.' The article was factually correct in many places. But in a number of spots it talked Independent telephone companies down and gave the impression that they are continuing in existence only by permission of the A-T-&-T and are being held up by props of one kind and another provided by our friends in the Bell System, which was flattering neither to ourselves nor to the Bell System.

"Now what was done about that situation? Without waiting for complaints to come in from the field, without holding up action until there could be a meeting of our Board of Directors, our Washington office decided the thing to do immediately was to write a letter to the Editor of the magazine pointing out the errors in the article, referring to the soundness of the operations of Independent companies and stating that they are able and do stand on their own feet. Mr. Bailey read to me over the telephone his proposed letter to the Editor of *Collier's* magazine. I was pleased that he had taken up the cudgel in behalf of the industry without prompting. Fairness demanded that the magazine print the letter, but to date it has not done so . . ."

Members of this USITA Conference group are (l. to r.): HERBERT E. HUSSEY, Lafayette, Ind., RUPERT E. SHOTTS, Chicago, and S. A. LANE, Russelville, Ark.

Mr. Blakeslee also praised the constructive work being done by association committees.

"The work being done by Association committees," he said, "likewise reflects both the usefulness and effectiveness of our organization. Serving on 16 regular committees, 10 subcommittees and 14 regional committees are more than 300 members, representatives of telephone companies who are giving the benefit of their matters that have been dealt with by "those who are wearing the harness," time and talents to research of various kinds and to the solution of problems common to all companies . . ."

Referring to the title of his address — "*The Job That Lies Ahead*" Mr. Blakeslee said "there is an old saying that water is colored by the soil through which it passes to reach the sea."

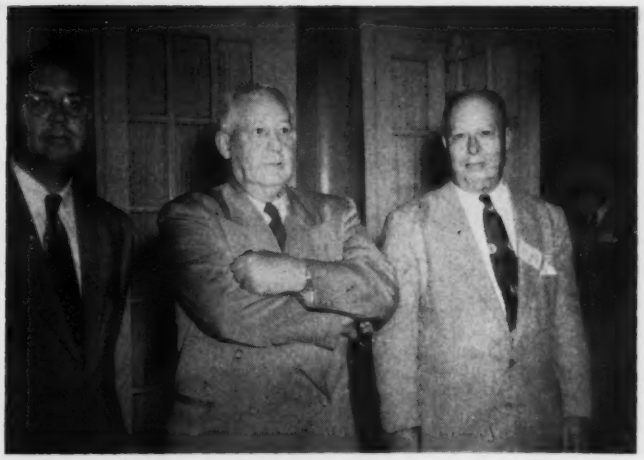
"Expressed in another way," he stated, "what each person sees ahead depends in a large part upon the nature of the experiences he has just been through."

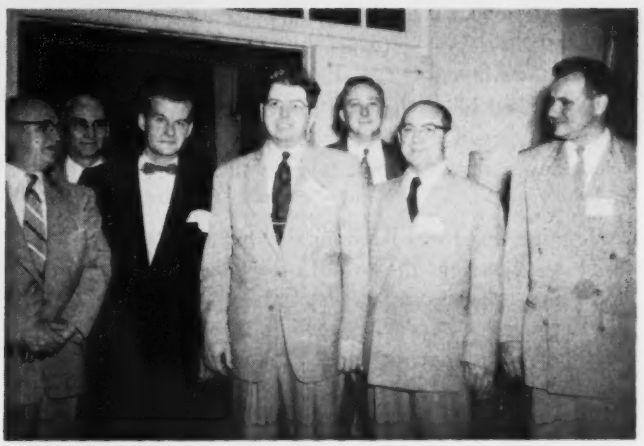
Mr. Blakeslee emphasized that a part of *the job that lies ahead* is that of keeping USITA geared up to represent effectiviely and promptly the legitimate interests of Independent companies.

"From what I have already said," he commented, "I believe it will be apparent that the Association has distinguished itself in many ways upon many matters. The organization is conservatively financed. Its exchequer is in a healthy condition. Our staff though small is competent. The Association enjoys a good reputation in Washington and elsewhere. It conducts its affairs, under an executive committee and a board of directors composed of leaders in the industry who have dedicated their lives to the telephone business and who have an intimate interest in the welfare of the industry and the trade organization which represents it on the national level.

"Fields in which the proprietry and need for continued vigilance suggest themselves include research of

Meeting between Conference sessions are (l. to r.): EMMETT SWANSON, Fort Wayne, Ind.; R. S. ODGAARD, Menomonee Falls, Wis.; RAYMOND H. BURFEIND, Chicago, and R. A. LUMPKIN, Mattoon, Ill.





USITA Executives' Conference was attended by 430 officials of Independent telephone companies. The above groups were photographed by TE&M Camera.

various kinds through committees and other groups, maintenance of liason with government establishments, conduct of negotiations with the Bell System on toll compensation, and other matters of common interest and concern many of which are already being intensively studied by committees or at our Washington headquarters. These fields also include matters pending before the Congress of the United States, such as wage, hour and other labor legislation; economic stand-by control legislation; taxation with special reference to the iniquitous telephone excise taxes and those hidden sales taxes which are inherent in corporate taxation; the highway bill involving proposed federal absorbtion of the costs of pole and line removals; the Section 2(b)(2) bill seeking preservation of Independent company exemption from FCC jurisdiction when radio is used in telephone operations; and any other legislation which would affect adversely or unfavorably the cost of providing telephone service and the rates that must be paid by our subscribers."

Emphasizing that all of these things have a definite bearing upon the welfare of Independent companies, Mr. Blakeslee stated that proper attention to them is a part of *the job that lies ahead*.

"Another duty we have to perform," he said, "as a part of *the job that lies ahead*, is that of telling the story of Independent telephony to the American people. It may be of interest to note here that I have appointed a Task Force to explore the feasibility of embarking upon a nation-wide program of advertising calculated and designed to bring information to the American people respecting the fact of the existence of Independent telephone companies, the service job they have done and the goals they are seeking to achieve. One of the objectives of the program will be to improve the general public relations of our companies in the communities served by them. Another purpose will be to assist in uncovering additional commercial sources of needed money for plant expansion and improvement, and in important quarters emphasizing the soundness of the operations of our companies from an investment point of view. Still another purpose will be to make it evident that with ability and willingness on the part of the industry to do a service job, the creation of telephone cooperatives at the taxpayer's expense is unnecessary . . . "

Mr. Blakeslee explained that a program of this character necessarily involves the expenditures of a sizeable sum of money. The Task Force that has been appointed is to report to the USITA Board of Directors on alternative plans deemed feasible and to suggest ways by which the cost can and should be defrayed.

"There is an important *job that lies ahead*," he said, "on this matter, for the Independent telephone industry, if a practical method can be found and the necessary money raised with which to meet the cost . . ."

Discussing adequate rates, Mr. Blakeslee emphasized that the number of stations served by most Independent companies has doubled since the War's end.

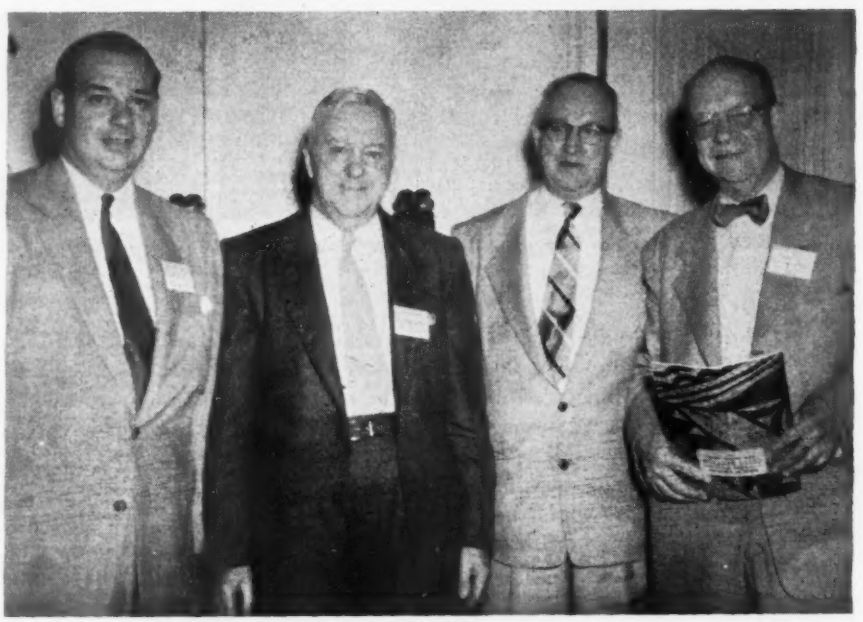
"The dollars invested in plant in many places have more than doubled,

and in some instances even quadrupled in the same period," he stated. "Yet increases in telephone rates have lagged far behind the general upswing in prices. Our member companies have turned in a phenomenal performance in the way of plant expansion to meet the tremendous backlog of demand for service which piled up during the War and during subsequent years while plagued by the shortages of material and equipment. Telephone companies have exceeded the expectations of their critics, but in many instances have fallen short of their own objectives and ideals. There is still a backlog of held orders and a continuing demand for additional service which promises well being for our industry if we can prevail upon the investor to continue entrusting his savings to us."

Members of this USITA Conference group are (l. to r.) — CARL BROREIN, Tampa, Fla.; CLAUDE MANNING, Chicago, and W. L. MOLLANDS, Atlanta, Ga.

Warning that there is no magic "by which we can hold the price for service down when costs all around us and the prices of everything we must buy have risen sharply," Mr. Blakeslee said, - "Call it what you may - whether attrition or inflation - rates which were adequate at one time in the past will not cover the higher plateaus of operating expenses and taxes and sustain a capital investment which has more than doubled per unit of service in the post-war period."

"In the face of continuing forecasted growth in the industry," he said, "and the necessity of adding new plant and replacing worn out, obsolete and inadequate plant at the present day higher unit cost of construction the trend of return without further and adequate rate relief will be definitely and continuingly downward for many of our companies in the future."



(L. to R.) FRANK THILGES, Chicago, T. C. MACOUBREY, St. Paul, Minn.; L. J. GADDIS, Chicago, and HARRY BATES, Dixon, Ill.

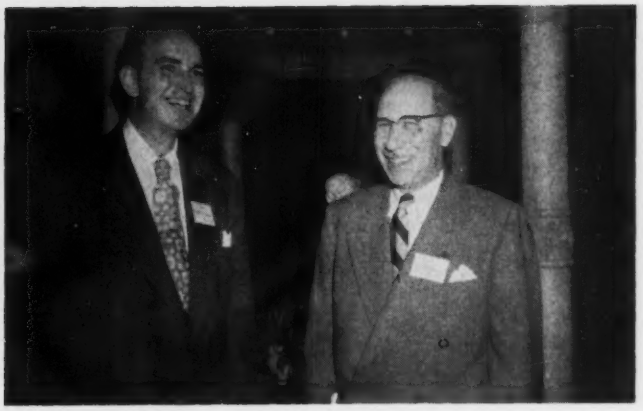
Commenting that the industry would be the first to recognize that rates for service must be as high as, but no higher than are necessary to enable the operating telephone company to attract the necessary capital to enable it to keep pace with the communication requirements of the community, Mr. Blakeslee warned, "Failure to obtain the return necessary to attract the required capital can only result in degrading the quality of service or in the utility's failure all-together to meet its obligation — all to the everlasting detriment of the public which we hold ourselves out to serve."

"*The job that lies ahead.*" he said, "is one of bringing about a greater awareness on the part of the public, which after all must pay the costs, and of the regulatory bodies of the necessity of treating our industry fairly, liberally and objectively in a situation where competition in the money market for the investors' dollars is growing keener and keener. . ."

In his concluding remarks Mr. Blakeslee said that before we are telephone men we are American citizens.

"One aspect of *the job that lies ahead.*" he said, "must be a determination to do our part in assessing the dangers that confront our country and to see to it that the right kind of people are elected to public office and encouraged to remain there. If we fall down in that responsibility and as a result thereof this Nation continues to dissipate its wealth and literally fling its natural resources to the four corners of the Universe, then we must reconcile ourselves to a continuing diet at home of confiscatory tax levels and discomforting inflation with attendant high prices and a cupboard bare of the qualities of initiative and incentive . . ."

"The telephone industry is made



Members of these Conference groups are (l. to r.): LOREN M. BERRY, DAYTON, Ohio; ANDREW J. SORDONI, Wilkes-Barre, Pa.; L. H. WARNER, Chicago, and W. W. EGE, Glassport, Pa.

up of men and women who are active in community affairs. Never in the history of our business has there been a greater need for strength and leadership than exists today. An important part of *the job that lies ahead* then is to measure up to the obligations of our American citizenship. The spirit and enthusiasm of thousands of thousands of telephone people and their devotion to their essential calling are pushing the communications frontiers farther and farther back. It is a process which has been going on since the invention of the telephone more than three quarters of a century ago. Each new generation has surpassed the accomplishments of that which has gone before it.

"The months ahead will be filled with uncertainties but from past experience there is every reason to believe that the zeal and initiative which have enabled telephone companies to forge ahead in the past will assure progress and accomplishment *in the job that lies ahead.*"

Toll Compensation 1953 Version

ROY JARMON, chairman of the USITA Toll Compensation & Settlements Committee, and president of The General Telephone Co. of the Northwest, brought the executive conference up-to-date on toll compensation. This subject rated the number one spot in importance to the conference group. Interest in the subject was high in pre-conference discussions and interest increased as Mr. Jarmon told the conference that information received by the Toll Compensation & Settlements Committee indicates that contrary to understandings reached during the recent Toll Compensation negotiations, certain of the Bell Associated companies propose to offer new agreements which, if accepted, would fail to produce the overall gain of $18,000,000 a year to the Independent telephone companies.

In reviewing activities of the Toll Compensation Settlements Committee, Mr. Jarmon referred to a meeting with Bell System representatives on Feb. 18-19. This meeting was held as planned.

"The Bell initial proposal," he said, "provided for additional 'A' and 'B' compensation amounting to $14,350,000. Your Committee estimated that the increased compensation should approximate a bare minimum of $25,000,000."

Mr. Jarmon stated that after almost three days of intensive negotiations, an understanding was reached that "A," "B" and Supplemental "B" Payment settlement schedules would be developed to produce the following additional compensation to the Independents, with certain changes in the treatment of line haul prorate:

"A" schedule commissions	$ 3,800,000
"B" schedule commissions	10,700,000
Sub total	$14,500,000
Supplemental "B" Payments	5,000,000
Total	$19,500,000

"The cost studies," he stated, "show that an interchanged toll business having an average revenue per message of 50c or less, costs incurred by Independent companies in performing operating functions exceed the total revenues derived from this business. In view of this situation Bell representatives agreed to pay a supplemental 'B' commission which applies in instances where this condition prevails in any month with respect to total 'B' commission messages."

Mr. Jarmon explained that these payments are estimated to amount to $5,000,000 on an annual basis. They are to be made during the period in which ways and means are being developed to eliminate the disparity between costs and gross originating revenues on the shorter haul traffic. The possibility of eliminating this temporary arrangement is subject to review in individual cases at the end of a year. Methods required to alleviate the situation may involve other factors such as further establishment of extended area service, etc.

"Bell representatives," he said, "stressed the possible need for action to obtain approval of toll rates which produce sufficient revenue to cover costs on short haul business."

Mr. Jarmon stated that the increase

ROBERT J. JONES (left) Columbus, Ohio and DONALD C. POWER, New York City, discuss USITA Conference proceeding.

of $14,500,000 in "A" and "B" commissions produces a corresponding reduction in the amount of revenue available for prorate among the participating companies.

"Under the existing method of prorating line haul compensation," he said, "the prorate revenues accruing to the Independent branch of the industry would have been decreased in the amount of approximately $3,000,000. However, a temporary revision of the prorate weighting schedule was negotiated, pending completion of further study. This revision will reduce the apparent loss by approximately 50 percent or $1,500,000. The net gain to the Independent companies on the basis of estimated 1953 volumes of traffic interchanged with the Bell System, therefore, amounts to $14,500,000 for "A" and "B" Commissions plus $5,000,000 for Supplemental "B" payments, less $1,500,000 or a total of about $18,000,000.

Mr. Jarmon explained that immediately following completion of negotiations with the Bell representatives on Feb. 20, 1953, the USITA Executive Committee met in special session to receive the report of the toll Compensation Committee.

"Thereafter," he said, "Ralph Shriner and Lew Hayner, acting as a sub-committee of the Toll Compensation Committee, spent an additional week in New York City working with Bell representatives designing new schedules and carrying out the basic principles agreed to during the Chicago negotiations. In working out these schedules it was found desirable to continue the 'A-1' schedule applicable to the first 500 messages at any one exchange, and the 'A-2' schedule for the remaining messages. The cost study data indicate that uniform 'A-1,' 'A-2,' and 'B' compensation schedules should be equitable for the nation as a whole because the average cost per message throughout the schedules was found to be substantially the same in each of the three settlement areas. Existing schedule differentials applicable to the present Group I, II and III settlement areas were therefore eliminated."

Mr. Jarmon said, "it is understood the American Telephone & Telegraph Co. suggested to the Bell Asociated Companies that new contracts reflecting these changes be offered effective as of Jan. 1, 1953, provided the new agreements are accepted by Independent Companies within 90 days after presentation.

Members of this Conference group are (l. to r.); WALLACE COOK, Chicago; E. L. LOVE, New Haven, Conn.; JOHN MORAN, Cookeville, Tenn.; GARLAND H. FOSCUE, Wilmette, Ill.; MARSHALL TAYLOR: ROY SIEMUND, Chicago, and V. B. CLARK, Lincoln, Neb.

"The Committee," he said, "has been informed within the past few days that certain of the Associated Companies propose to offer, or have offered, new agreements which differ from some of the understandings reached during the Feb. negotiations in Chicago. It is understood these include: (1) reclassification of toll credit card, transfer of toll charge service and third number toll calls from 'sent paid' to 'sent collect' of Supplemental 'B' Payments in instances where the average revenue per message is 50c or less in any one month on 'B' commission messages."

"Also," he said, "the new agreements provide for computations for determining prorate revenues of the connecting companies with which we are not in accord for the reason that no consideration is given to variation in revenue value of the message miles among toll routes . . ."

Mr. Jarmon explained that the A. T. & T. Company takes the position that it can only make suggestions to the Bell Associated Companies regarding the revisions in the settlement agreements.

"Yet," he said, "in the past two years while we have been making our cost studies more than one of the Associated Companies have refused to negotiate upward revisions of the connecting company contracts on the grounds that the entire matter was out of their hands pending completion of the studies. In view of this situation, our Committee recommends that in negotiating revised agreements each of you insist that your Bell Associated Company conform to and meet the suggestions of its parent, the A.T. & T. Company.

"Execution of new traffic agreements is, of course, a matter for individual negotiations between Independent companies and their connecting Bell Associated Company. Further, any Independent company, if it wishes, may make its own cost studies and enter into negotiations on the basis of the results of such studies. The Bell representatives have stated that the Associated Companies stand willing to cooperate in making any such cost studies that appear desirable or necessary."

Mr. Jarmon emphasized that the over-all increase in revenue to be received by the Independent branch of the telephone industry resulting from the negotiations is substantial, and appears to be within reason in view of the urgent need for immediate relief.

"Additional commission and prorate payments to the Independents," he said, may be found justified as a result of further separation and cost studies undertaken by the Committee and those now being prepared by many individual companies throughout the nation. Any action aimed at achieving permanent relief should

(Please turn to page 87)

Modern Circuit Testing Methods

By RICHARD ALLEN

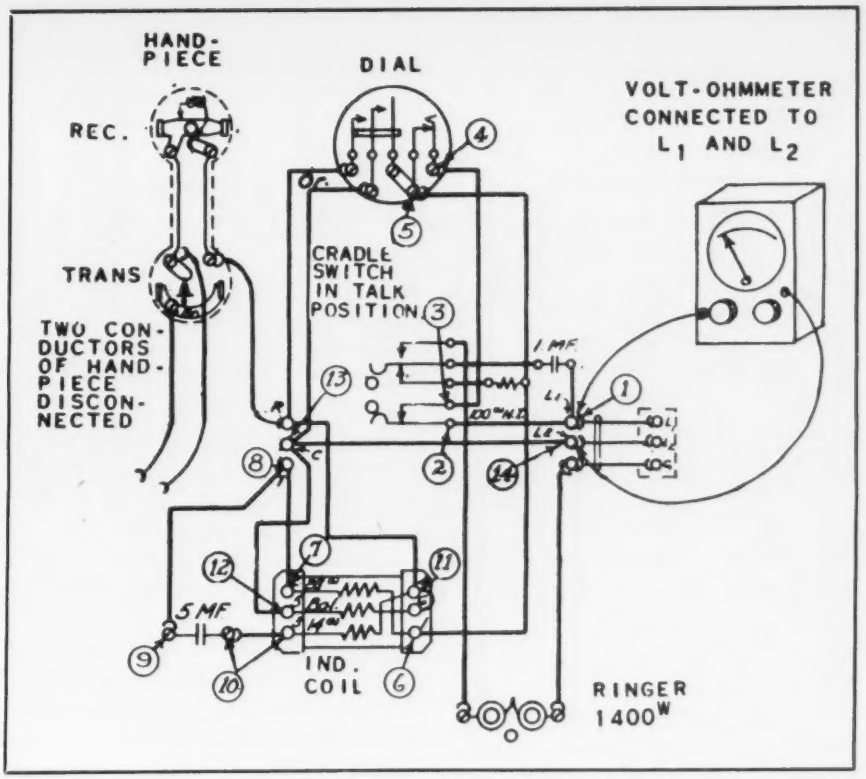


Figure 18—Locating an open in the signaling circuit of an automatic handset. Meter indicates condenser kick.

Part IV of this article describes practical test procedure based on the experience of a telephone company with the wire chief's voltmeter or line test panel volt-ohmmeter. (See June 1 Fortnightly Telephone Engineer for part III of this article.)

TO CHECK the condition of the primary circuit, the battery leads are disconnected from the subset battery and the volt-ohmmeter is connected to these leads. With the receiver on the hook, a normal reading of 150 to 200 ohms will result. This will be the resistance of the transmitter. Blowing into or tapping on the transmitter will cause the reading to drop to between 85 and 125 ohms. No reading would indicate an open in the primary circuit.

To check the condition of the induction coil primary, short circuit both the transmitter and primary winding terminals and set the meter to zero on the lowest resistance scale. Remove the short only from the coil terminals. The meter should read 1 ohm, or slightly less, if the coil winding is not short-circuited internally. (This method eliminates the resistance of the wiring in the set and assures a reasonably accurate reading).

With the receiver off the hook, no reading on the meter would indicate satisfactory operation of the switchhook, as far as the primary circuit is concerned. A short-circuit or high resistance reading would indicate improper adjustment of the hookswitch, dirty contacts, or a breakdown in the spring insulation. The presence of this trouble may be verified by moving the hook up and down and noting the changes that occur in the meter reading.

In cases where testing a circuit in one of the foregoing ways does not indicate just which part of the circuit is at fault, a "point-to-point" test with the volt-ohmmeter will determine the exact location of the trouble. To illustrate the method, assume that there is an open somewhere in the secondary circuit of the subset. Leaving the receiver off the hook, one meter clip is attached to terminal L_1 (secondary circuit in *Figure* 18). The other clip is touched to exposed terminals along this circuit, beginning with terminal 1 and then continuing to terminals 2, 3, and 4, etc., in order, to terminal L_2. A point will be reached where the meter will not give the normal reading. This indicates that the open is between this point and the last one where normal readings were obtained:

"It is not sufficient to merely provide a man with good test equipment and expect him to clear difficult cases of trouble in a few minutes."

In this test, the following readings were obtained:

L_1 to 1—Short-circuit reading

L_1 to 2—Resistance of receiver winding (90 ohms).

L_1 to 3—Resistance of receiver winding.

L_1 to 4—Condenser kick (transfer clip on L to terminal 4).

L_4 to 5—Short-circuit reading.

5 to 6—No reading (normally should indicate 20 to 30 ohms). Check by connecting meter clips to terminals 5 and 6. In this case no reading is obtained, thus definitely

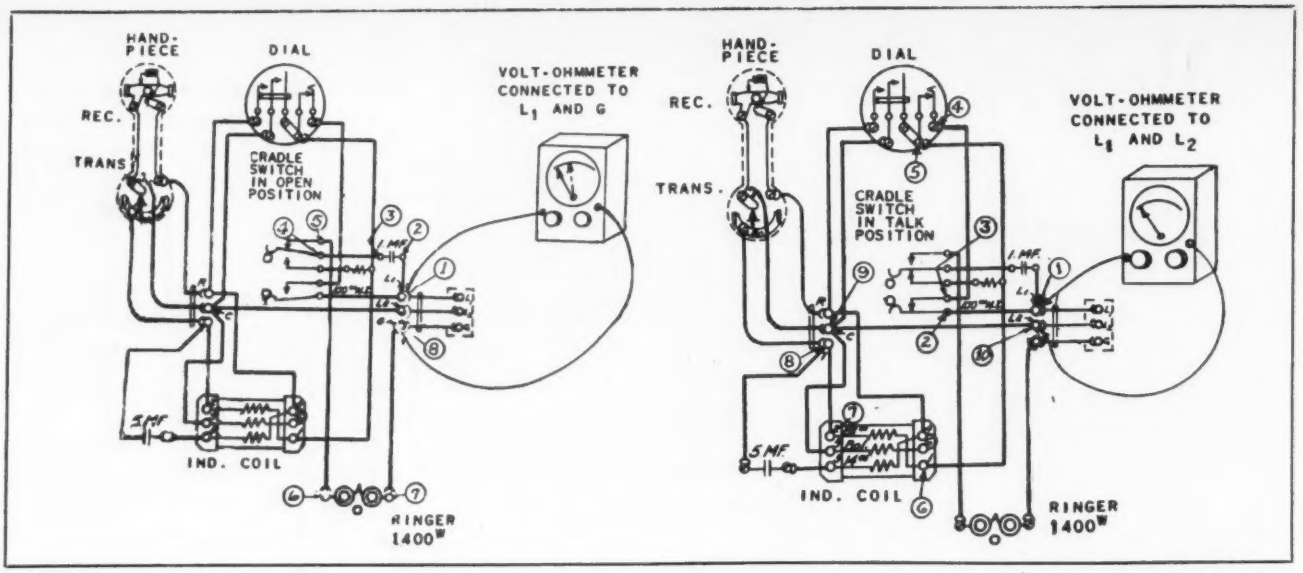


Fig. 19—Locating an open in the primary circuit of an automatic handset.

Fig 20—Locating a short in the secondary circuit of automatic handset.

proving that the open is in the secondary winding of the induction coil.

After replacing the defective coil, another point-to-point test indicates that the circuit is now complete from L_1 to L_2 with a normal reading at L_1 to L_2 (100 ohms when the condenser terminals are short circuited.)

Testing Common Battery And Dial Telephone Instruments

IN THE CASE of common battery and dial telephone instruments, the complete circuit of the set is separated into three sections in the same manner as for magneto subsets. The difference, however, is that both the primary and secondary circuits are connected to terminals L_1 and L_2 of the set and that, in some instances, the signaling circuit is connected to L_1 and G (for ground ringing) instead of to L_1 and L_2. This requires a different testing procedure and possibly the breaking up of a circuit into two or more parts to isolate one part from others for testing purposes. The separation of a circuit into two or more parts may be accomplished by temporarily disconnecting one or more cord conductors at screw terminals, removing a transmitter or receiver capsule unit from a handpiece, or inserting a piece of paper or cardboard between contact springs.

When the signaling circuit appears to be in trouble, the line is disconnected from the set and the volt-ohmmeter leads are connected to terminals L_1 and L_2, or L_1 or G as necessary to place the meter across the signaling circuit. This test is made with the hookswitch depressed.

The meter needle should deflect momentarily when the meter is connected and then drop to infinity reading on the high resistance scale. This would indicate the "ring" condenser to be in good condition. If the meter reads the ringer resistance, the condenser is short circuited or, if it shows a high resistance reading, the condenser is leaky.

If the condenser is good, short circuiting the condenser terminals should cause the meter to read the resistance of the ringer. If, the reading is lower than normal, there is a short in this signaling circuit, quite likely in the ringer coils. The meter is connected directly to the terminals of each coil to verify this fact.

When no condenser kick is obtained and the meter indicates an open, one meter clip is left connected to the line terminal and the other clip is touched to the other terminals in the signaling circuit in order as indicated in *Figure* 18. In this particular case, the following test results were obtained when one meter clip was connected to L_1 at (1) and the other clip to other terminals:

L_1 to (2)—Short-circuit reading.

L_1 to (3)—Condenser kick (relocate meter clip at (3) and proceed from this point).

(30) to (4), (3) to (5), and (3) to (6)—Short-circuit reading.

(3) to (7)—No reading, indicating an open between (6) and (7). (In this case, the open was due to a burned out connection at a ringer coil terminal caused by lightning.)

To check the condition of the primary circuit of the subset, the meter is connected to terminals L_1 and L_2 of the set as shown in *Figure* 19. With the receiver off the hook, the meter will read the resistance of the transmitter in series with the primary winding of the induction coil. Blowing into or tapping on the transmitter will cause the reading to fluctuate. An open in the circuit will be indicated by no reading on the meter. and a short by a lower than normal reading.

On dial sets, rotating the dial to 10 and then letting go will cause the meter needle to vibrate at a certain point on the meter scale (around 50 on the lowest resistance scale of the type of meter under discussion). This test detects erratic operation of the dial or short-circuited impulse springs.

The secondary circuit is tested in the same manner. Because of the interconnection between the primary and secondary circuits, it will be necessary to separate the two circuits. When this is done in the case of the circuit shown in *Figure* 19 the meter will indicate a condenser kick on connecting to terminals L_1 and L_2 because of the "talk" condenser which was shunted by the transmitter before the handpiece cord conductors were disconnected. Short circuiting the condenser terminals will cause the meter to indicate the series re-

sistance of all the three windings of the induction coil, as would happen if there were an internal short in the talk condenser. An open reading with no condenser kick might indicate an open condenser or an open elsewhere in the circuit, requiring a point-to-point test to locate.

To illustrate the use of the point-to-point test for locating an open in the primary circuit of a dial subset, let us consider the example illustrated in *Figure* 20. One meter clip is connected to terminal L_1 (1). The other meter clip is touched to each of the terminals or lugs in the primary circuit in order (2, 3, 4, 5, etc.) until the open is located when no reading is obtained on touching the clip to a terminal.

The following test results were obtained in the case illustrated:

L_1 to (2), (3), (4), (5), and (6) in turn—a short-circuit reading each time.

L_1 to (7)—meter reads resistance of primary winding (28 ohms).

L_1 to (8)—meter reads resistance of primary winding.

L_1 to (9)—meter fails to read, indicating open to be between (8) and (9). (In this case the trouble was found to be a bad cord connection at the screw terminal.)

Magneto Test Set With Directional Fault Finder

THE PRINCIPAL advantage of the magneto test set with directional fault finder is its ability to indicate the direction of the fault. Although it can be used for direct tests without the directional finder feature, it is desirable to employ a more sensitive instrument, such as the volt-ohmmeter, in situations where the fault resistance is too high for satisfactory operation of the magneto test set.

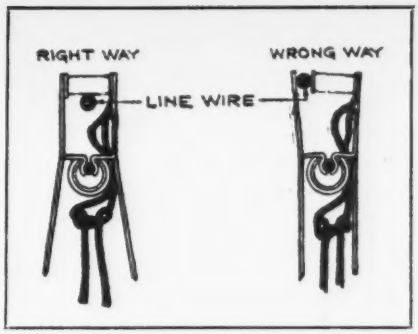


Fig. 21—Method of connecting finder coil of West test set to line.

The test set under discussion is a well known type, the West test set, which is a portable magneto telephone equipped with a finder coil, handpiece, hand generator, test lamp, transmitter battery, switching key, and test cord with clips. It is designed to perform the following functions:

(1) Determining the direction to the fault.

(2) Estimating the distance to the fault.

(3) Testing the line for high-resistance condition.

(4) Ringing and talking on the line.

Using The Directional Finder Coil

THE DIRECTIONAL finder coil is employed for determining the direction to the fault from the testing point. This unit consists of a coil of wire wound over an iron core attached inside a spring clamp as shown in *Figure* 21. The coil is connected in series with the receiver unit in the handpiece.

When the finder is hung over one of the line wires and the test cord is connected to the line wires, operating the hand generator will send out impulses over the line. These impulses induce a current in the finder coil which is transmitted to the receiver and reproduced as a tone there. *Figure* 22 illustrates the action.

To find the direction to the fault, the test clips are snapped onto the line wires and the finder coil is hung on one side of a test clip. Care should be taken to properly place the coil as indicated in *Figure* 21. The generator crank handle is turned rapidly while at the same time listening in the receiver for the test tone.

If a tone is heard, the trouble is on the same side of the test clip as the finder coil, thus indicating the direction of the trouble. The strength of the tone varies with the distance to the trouble, thus greater the distance, the weaker the tone. If no tone is heard, the finder coil is transferred to the other side of the test clip and the test is repeated. A tone heard on both sides of the clip is an indication that the trouble is in both directions. In this case, the fault at the far end of the line is cleared first and then the other fault nearer the office.

When the risistance of the fault exceeds 2000 ohms, the tone becomes too faint to be heard and the direction to the fault then cannot be determined. In this case, it will be necessary to open the line and make tests in each direction, using the volt-ohmmeter if required for a more sensitive test.

Locating A Short With The West Test Set

TO LOCATE a short, the test clips are connected to the conductors

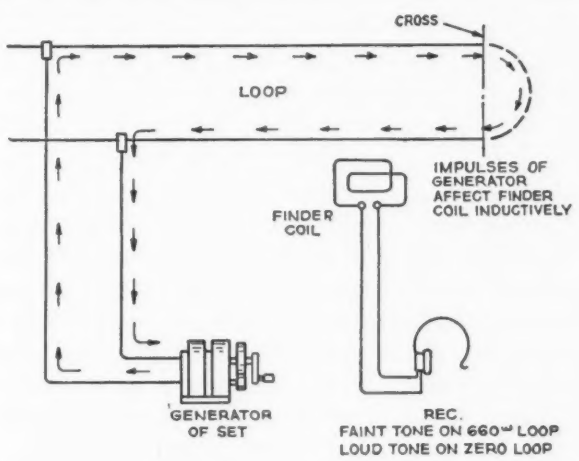


Fig. 22 (Left)—Operating principle of test set with directional fault finder.

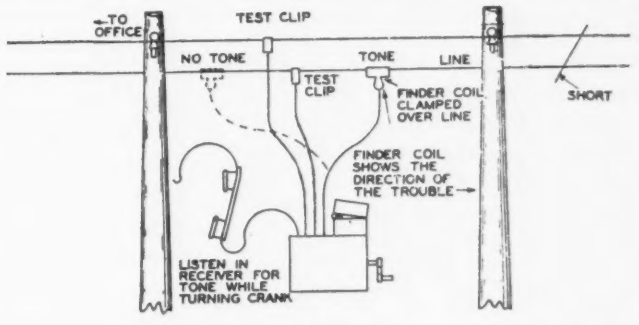


Fig. 23 (Right)—Method used to locate a short with the West test set.

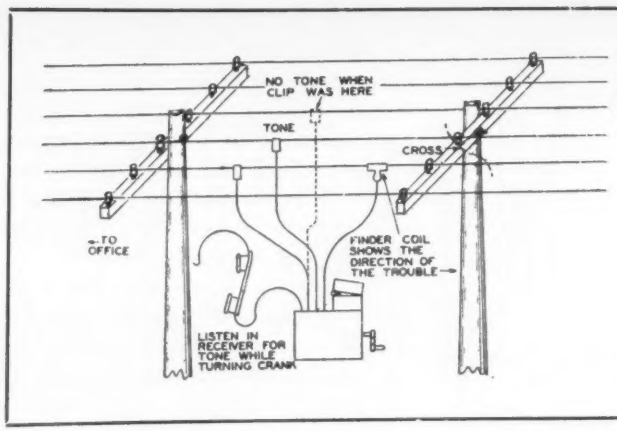

NO TONE WHEN CLIP WAS HERE
TONE
CROSS
TO OFFICE
FINDER COIL SHOWS THE DIRECTION OF THE TROUBLE
LISTEN IN RECEIVER FOR TONE WHILE TURNING CRANK

Fig. 24—Locating a cross between two lines with West test set.

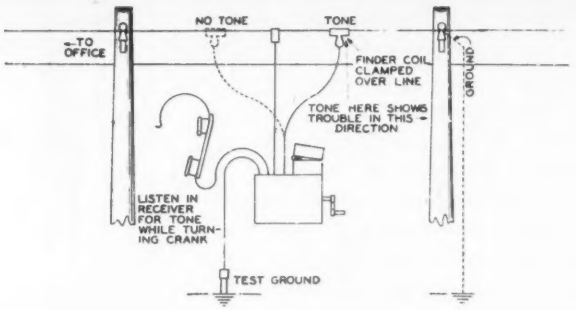


Fig. 25—Procedure for location on a ground, using the West test set.

of the line and the finder coil is hung on one side and then the other of the test clip as required to determine the direction to the fault, while turning the generator crank to send out the tone. The method is illustrated in *Figure* 23.

This test is made at various points progressing along the line until the fault is passed. At this time, the finder coil will point in the opposite direction when the tone is picked up, indicating that the fault has been passed. Tests are made, working back until the short is located.

If the short is a solid one, the test lamp in the set will indicate by its degree of brilliancy how close the fault is, thus saving time by reducing the number of test points needed to locate the fault. If the resistance of the loop through the fault is 600 ohms or less the distance to the fault can be estimated by the brightness or dullness of the lighted lamp. An experienced man can estimate this distance with reasonable accuracy.

Locating A Cross Between Two Lines

TO LOCATE a cross between two lines, the set is connected between the crossed lines as indicated in *Figure* 24. One test clip is connected to the line wire on which the finder coil is hung. While cranking the generator, the other clip is connected to the other line wires in turn until the tone is picked up, showing these particular wires to be crossed.

Tests are made at other points along the line, progressing towards the fault and connecting to the same wires shown to be crossed until the fault is passed, and then back in the opposite direction to obtain a more definite location of the crossed wires.

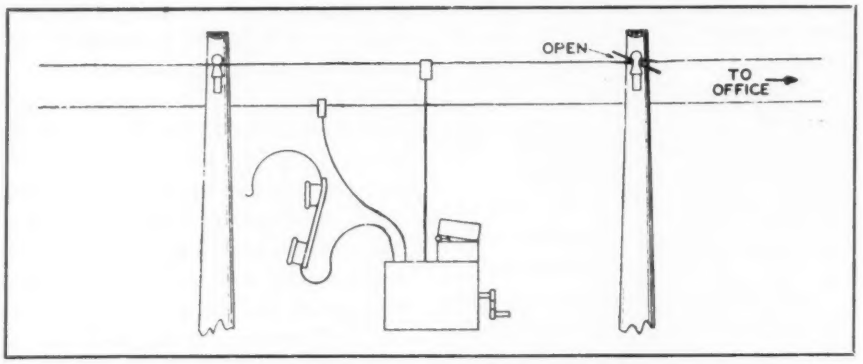


Fig. 26—Method of locating an open in a magneto line. When operator cannot be raised on being signaled, open is between set and office.

Locating A Ground

TO LOCATE a ground, one test clip is connected to one or the other line conductor as required and the other clip to a test ground as shown in *Figure* 25. This test ground is obtained by connecting to a pole guy or to a station ground rod pushed a couple of feet into the ground. In the latter case, a length of ground wire is spliced to the tail of the ground rod and the other end of the wire is taken up the pole for the connection.

The finder coil is hung on one side or the other by the test clip as necessary to pick up the tone which indicates the direction of the ground. Tests are made at progressive points along the line until the fault is passed and then back in the opposite direction along the line until the fault is definitely located.

When the resistance of the ground fault is so high that the fault finder coil or the test lamp will give no indication of the trouble, the fault can be located by using the receiver of the set in series with the generator across the line wire and the test ground connection, provided that resistance of the fault is not greater than one megohm. This method is sensitive enough to locate high resistance tree leaks (wet grounds). It is, however, necessary to open the line to determine the direction of the fault.

To locate an open in a magneto line, the set is connected as illustrated in *Figure* 26, and the operator is signaled by turning the generator crank. If the operator answers, this indicates that the set is between the open and the office. This procedure is repeated at different points along the line, working away from the office, until the operator fails to answer on being signaled. This indicates that the open is now between the set and the office. Tests are then made at more frequent intervals, going back towards the office until the operator is again raised. Additional tests in the reverse direction away from the office should then quickly locate the fault.

This method will not work on common battery or dial lines and it will be necessary to strap the line at successive points and test with the generator and fault finder coil until the open is located. It is usually quicker to use a hand test set to locate the open by the absence of battery click or dial tone when the fault is between the set and the office.

"You've hired us . . . Now teach us everything you know . . . Let's learn more together . . ."

MEMO: - On The Care of New Employees

by JOHN C. BOYTER*

YOU'VE HIRED me—and now I get training to help me be worth more to your business than my pay. Brief me on your organization. Introduce me to all these strange people, my new associates, and thoroughly explain my first assignment. Boss, make my first impressions good—be thorough and sincere. And ask me to change my impressions to convictions on my own judgment—later.

Now put me to work. It's the first *real* job I ever had and the most important in the world to me. Check me occasionally to answer my stupid questions. About this time I realize that a college sheepskin doesn't guarantee success—I realize my seeming worthlessness, and I'm afraid you'll find it out. Praise on some little point is necessary right now.

During this time older men are giving the beginners intensive lectures on company organization, copy writing, campaign planning, practice on public speaking, salesmanship and a touch of accounting. The benefits we derive from these classes depend on the competency and sincerity of your instructors. Give us the best training you can—because well-trained, competent men are your biggest asset, the backbone and most of the appendages of your business — and worth far more than your physical plant. Give us the best you can, and we will give you the highest return on this, your business investment.

Remember, however, that we learn best by *doing*. Claude Hopkins claimed 70 years' experience after only 35 because he worked twice as hard as anyone else. Take this hint, Boss, and pile on the work. A hard-working man hasn't time to be unhappy—and the beginner wants to start making a profit for you before you expect it.

After the class work, I begin considering your business as my business, too. Now put me on a different and more challenging job—maybe before I think I'm ready. Force responsibility on me and let me sink or swim. If I rise above the responsibility, you've developed a good man and can congratulate yourself on doing the *world's most difficult job*.

Boss, there's more difference between your trainees than their fingerprints. Machines are only similar—it is mathematically and physically impossible to have even two identical ball bearings—and you'll agree man is infinitely more complex. Treat us as individuals—make friends with us as individuals and treat our problems separately. You have a big job cut out for you.

"I don't have time for all that," you say. You'd better find time. Be smart, Boss, spend your time with and for your men. Respect them, fight for them, do everything in your power to make them rich in experience and money.

Teach us everything *you* know, let's learn more *together*, treat us as individuals — and we will be inexperienced in only one thing—finding *new* jobs.—THE END.

Mr. Boyter is a member of the Advertising Dept. of the Carolina Power & light Co., Raleigh, N. C. The article is reprinted from PRINTERS' INK, *Feb. 6, 1953. Copyright 1953, Printers' Ink Pub. Co., Inc., 205 E. 42nd St., New York 17, N. Y.*

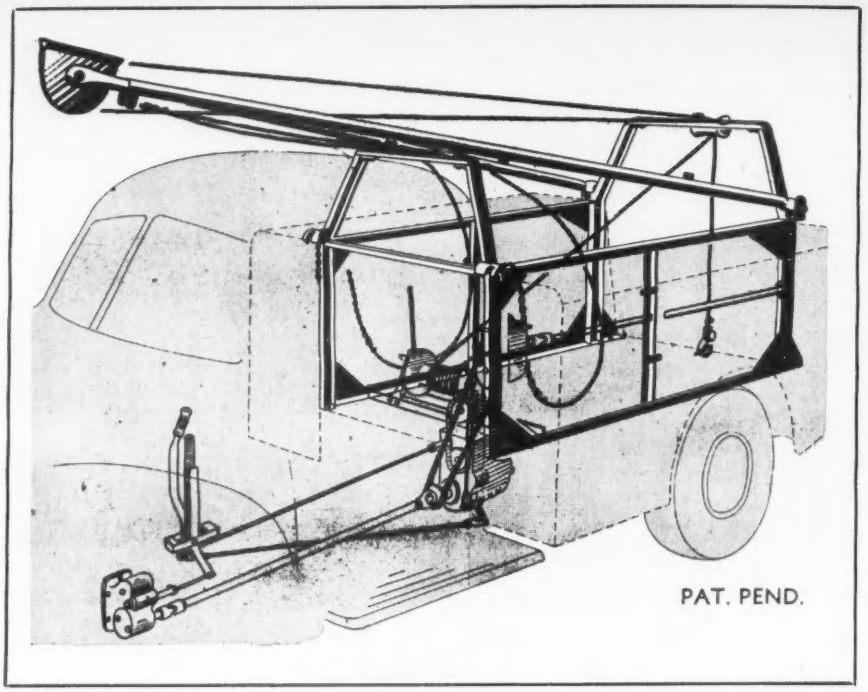


Fig. 26 — Illustrating structure of derrick and its framework and arrangement of drives for winch and digger unit.

Modern Construction Methods

By JOHN S. REED

Many factors, including new methods and new ideas, combine to stimulate the continued growth and development of the "world's best telephone service."

AS DESCRIBED in Part II of this article (May FORTNIGHTLY TELEPHONE ENGINEER) the use of a portable hole digger such as the one illustrated in *Figure* 27 will solve this problem. This unit is driven by an electric motor which obtains its power through heavy cables from a portable gasoline driven generator. This digger requires the use of a bipod or tripod with chain hoist to lift out the auger after the boring operation. There is a need for a motorized hoist to lift out the loaded auger. At the present time an operating company is working out this kind of hoist for use on its portable diggers.

The plan for replacing previous five-man crews with two-man crews for maintenance and light construction work is expected to effect savings through a large reduction in labor costs sufficient to justify the outlay for elaborate and expensive power operated tools. This plan is considered advantageous for small operating companies, also for companies operating a number of exchanges. In the latter case, exchange men can be relieved of the task of attending to preventive maintenance work in the outside plant and instead, devote their time to station installations and restoration of lines downed by storms.

New Type Of Cable Terminal Facilitates Installation

CABLE SPLICING has always been a vexing problem for telephone plant men because of the skill and patience needed to properly make conductor splices and afterwards to wipe a lead sleeve over the exposed cable core.

This difficulty can now be overcome by using plastic jacketed cable in conjunction with a cable terminal especially designed to do away with the difficult and tedious steps of splicing the cable. The terminal illustrated in *Figure* 28, was developed by the RT & E Co. of Milwaukee and is manufactured by them as the Type MP telephone cable terminal.

The Type MP terminal has certain unique features that cuts in half the time ordinarily required to terminate and splice the cable. The terminal itself is mounted onto the through bolt of the cable suspension strand with an extra nut and, in addition, a reinforcing bracket is lagged to the pole to rigidly support the terminal.

The terminal has a split base construction with split grommets to permit looping the cable into the terminal without cutting. The outer jack-

et and sheath are removed from the portion of the loop inside the terminal and a small section of the insulation removed only on the pairs to be terminated without cutting the wires. After terminating these pairs, the remaining pairs are tucked back into the terminal chamber and the face plate is fastened back in position. The terminal is then ready for connecting drop wires and replacing the cover. These steps are illustrated in *Figure* 29.

The MP cable terminal is versatile, as only one terminal is employed for any size of plastic insulated and jacketed cable up to 101 pair size through the use of the proper size of split grommet. For larger cable, a 16-pair stud can be installed in the terminal and spliced to the cable in the conventional manner.

Knockouts in the face plate are available for the installation of additional terminal studs so that 6-or 11-pair terminals may be increased in capacity in the field up to a maximum of 16-pair at any time. Only one installation is needed for any count up to 16-pair. The MP cable terminal normally is made for terminating 6, 11, or 16 pairs; however, the bakelite face plate is so arranged that the count can easily be changed without reopening the cable. Since the unused insulated pairs are available in the loop, splicing is eliminated and only a simple connection to the face plate is required.

The installation of the MP cable terminal can be made without the use of any special tools, such as platforms, ladders, furnaces, metal pots, etc. Field tests indicate that savings of 50 percent in labor can be made. No extra material is required other than one lag screw and one through bolt-nut.

The loop-thru characteristics of the terminal provide a convenient test and cut-in point when locating exchange trouble.

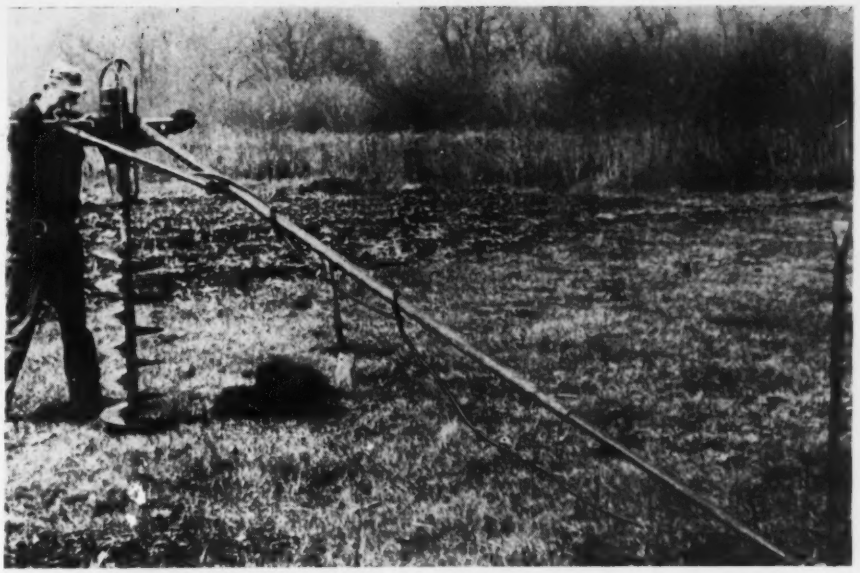


Fig. 27—The Ka-Mo portable pole hole digger

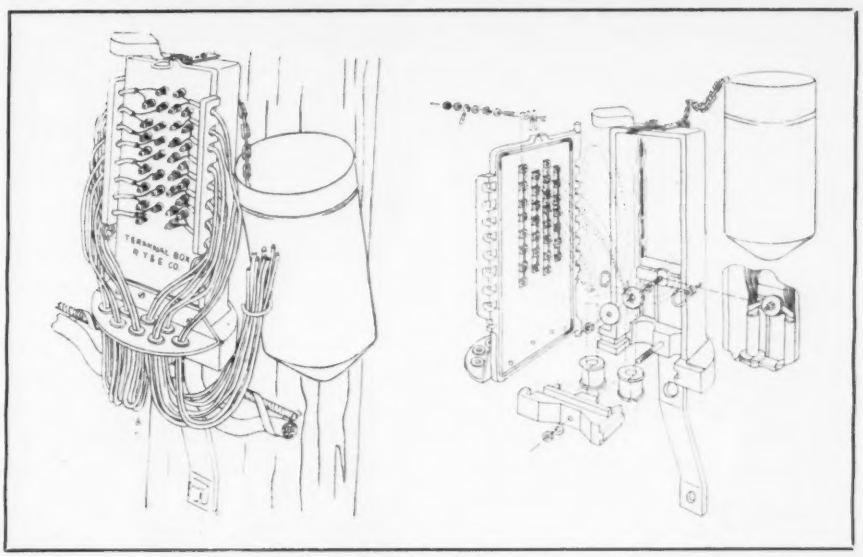


Fig. 28 — RT & E Co. Type MP cable terminal. Left — View with cover removed. Right — Interior view. Inset shows method of attaching shield tapes to terminal frame for grounding.

New Homelite Generator For Portable Service

NEW DUAL-VOLTAGE 5-kilowatt carryable generator, designed to meet modern industry's growing needs, has been announced by Homelite Corp., Port Chester, N. Y. The new generator, Model 32A115/230-1, illustrated in *Figure* 30, will carry a continuous load of 5,000 watts, single-phase, 60 cycle alternating cur-

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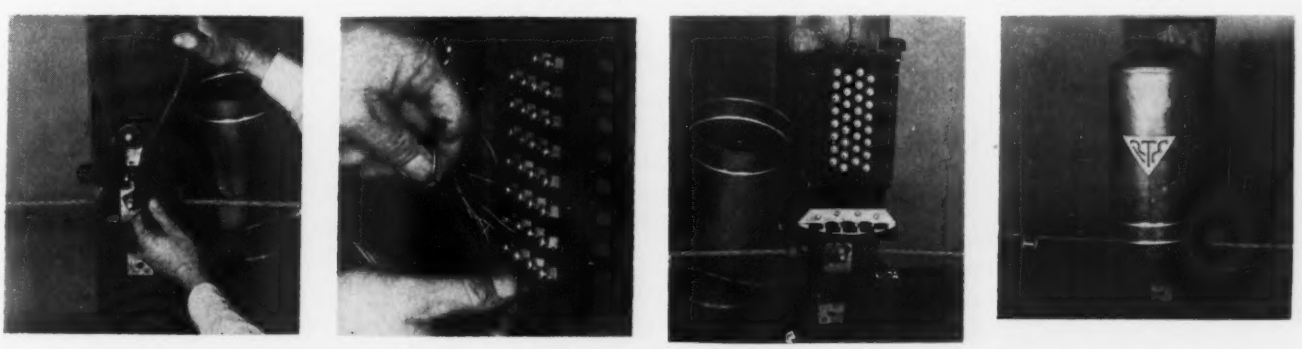

Fig. 28 and Fig. 29—Steps in mounting RT & E Co. Type MP terminal and connecting cable pairs. L. to R.: (1) Cable looped in box; (2) Pairs terminated to face plate; (3) Assembly ready for drop wire; (4) Completed installation.

rent at either 115 or 230 volts. It has ample power to operate a great variety of electric tools and equipment such as electric-driven earth borers, chain saws, grinders, masonry drills, and wood auger bits in outside plant maintenance and construction, and for emergency lighting and standby power for central offices.

A 115-volt AC standard convenience outlet is supplied, together with a waterproof 3-pole receptacle for connecting either 115 or 230 volt motors, tools, and appliances. Driven by a Homelite Model 32 gasoline engine, the generator has specially impregnated armature and coils to give high resistance to oil, moisture, and abrasive dust. For maximum compactness, the armature is keyed directly to the one-piece, drop-forged, engine crankshaft; and the large size carbon brushes are easily accessible. Voltage regulation from no load to full load is approximately 6 percent.

Built to withstand the roughest use, this sturdy generator has ball and needle bearings at every point of friction. A pressure vapor oiling system assures adequate lubrication of all engine parts. All major castings are of durable alumium alloy. Rain and dust proof ignition, plus an adjustable jet-type pressure fuel system makes the one cylinder, air cooled, 2 cycle gasoline engine easy to start in the coldest, wettest weather.

The compact unit has adjustable handles (*Figure* 31) or 2 or 4 man carrying. Dimensions are: 29″ long, 24½″ wide, 25½″ high. The generator, complete with gasoline engine, weighs only 228 pounds.

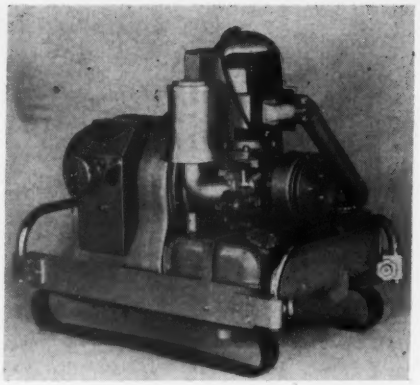

Fig. 30—Homelite portable generator. Note that carrying handles are turned inward when generator is not being carried.

Fig. 31—Showing ease of transporting the Homelite portable generator

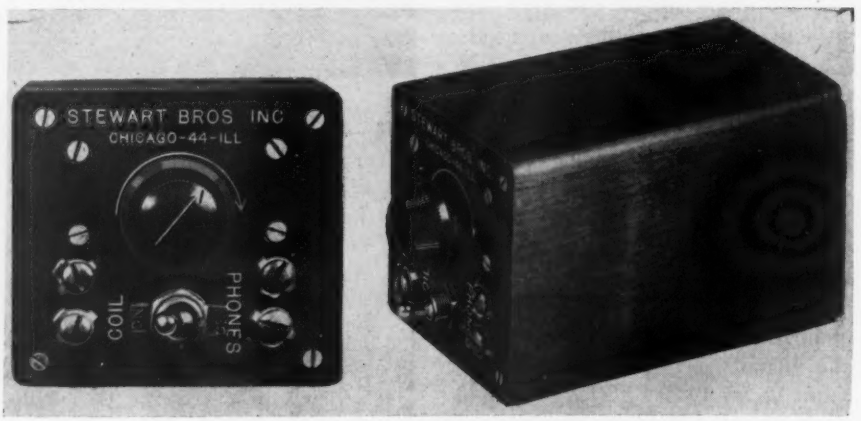

Fig. 32—View of Stewart Exploring Coil Amplifier, showing attachment terminals, volume central knob, and sliding panel in bottom (right view) for changing batteries.

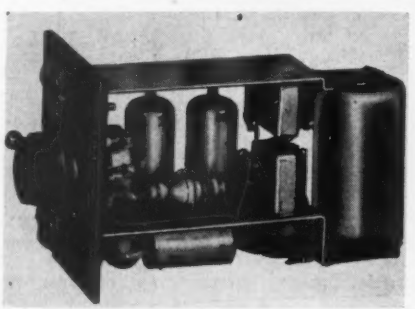

Fig. 33—Interior view of Stewart Exploring Coil Amplifier showing compact assembly of the unit. This amplifier is small enough to fit in pocket or suspend from the body belt, yet it is powerful enough to furnish a strong signal by a quick turn of the volume control.

Fig. 34—Stromberg-Carlson Type 1400 Telephone of new design incorporating ringer volume adjustment that can be made by the subscriber.

Exploring Coil Amplifier Facilitates Trouble Location

INDUCTION type tone gererators are commonly used with an exploring coil to determine the location of a cable fault by the abrupt reduction of the tone pick up when the fault is passed.

Most standard cable testers are engineered to emit a signal strength of approximately .003 volts from the sheath of a lead covered cable. This is often difficult to hear especially on windy days, in noisy locations, or when the fault is of low resistance value. To attempt to increase the imput signal strength causes carryover beyond the actual trouble and directly "noises" up adjacent lines. These difficulties are resolved simply by amplifying the emitted signal to a point where it is 140 times as powerful as the actual emanation from the cable itself.

A two-stage circuit is employed in the Stewart Cable Tester Amplifier. This utilizes a resistance coupled amplifier having impedance-matched input and output with reference level of 20 cycles.

In operation, it is only necessary to attach receiver cord to one set of terminals on amplifier and exploring coil to other set of terminals. A volume control on amplifier enables the operator to set the signal tone as loud as desired. Any type of receiver will give perfect results as long as it has an impedance of between 40 to 100 ohms at reference level. All component parts used in the Stewart amplifier are standard stock items. These may be repaired or replaced by any competent radio repair man should they become damaged.

The Stewart cable tester amplifier is illustrated in *Figures* 32 and 33.

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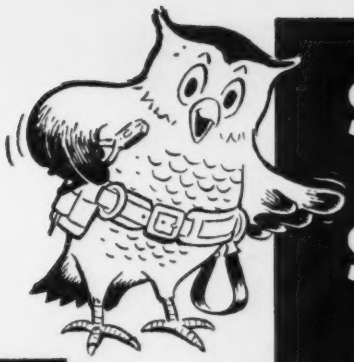

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Field performance over two years now confirms original test claims for this Reliable method of splicing and dead-ending steel strand, messenger, static and guy wires.

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1. Detailed Test Reports
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Reliable

Telephone Protective and Terminal Equipment for all Station, Line and Central Office Needs.

Yes

- ✓ "Installed Costs" go down as guys go up fast, safe and sure. The feed-thru Strandvise, at anchor eye, permits all degrees of tension. Slack guys are tightened in "no time".
- ✓ The greater the load, the tighter they hold. Gripping jaws do not damage the zinc coating of the strand. The Preece Test supports this claim.
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Easy speed makes a splice or dead-end with this Reliable method. Most cable spinning machines pass the Strandlink with ease. Some require only that traction rollers be opened.

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OVER 45 YEARS SERVICE TO THE TELEPHONE INDUSTRY

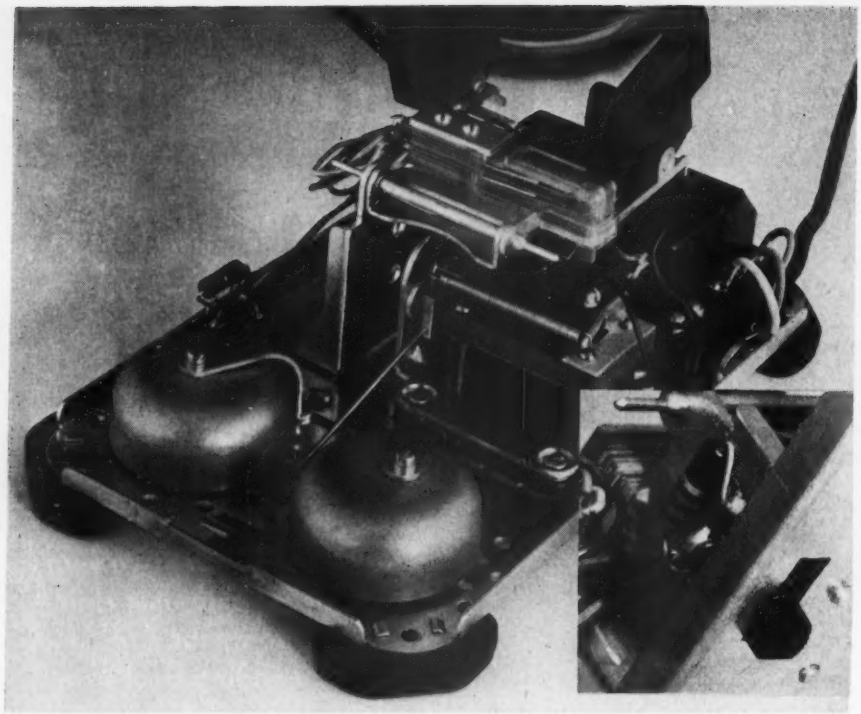

Fig. 35—Stromberg-Carlson Type 1400 Telephone showing resistors for changing volume of bell. Inset shows three position toggle switch which enables the subscriber to adjust the signal volume.

Fig. 36—Above—Subscriber muffling telephone bell by placing a pillow under the telephone. In extreme cases, a subscriber may place another pillow on top of the telephone for more effective muffling. Below, Left—A runner under the telephone will reduce volume of telephone bell somewhat. Below, right—Placing the telephone on a bare surface improves the ringing volume, but may make the bell too loud to suit the subscriber.

It is a compact unit measuring only 3″ by 3½″ x 5″. One 1-T-4 tube is used in the first stage of amplification, and one 3-S-4 tube in the second stage. Filament current is supplied by a single 1½ volt flashlight cell. A 45 volt hearing aid type B battery furnishes the plate current.

Proper Adjustment of Bells Reduces Call Backs For Readjustments

ALMOST HALF of ringer troubles are complaints that the bell is either too loud or too soft. Nothing is actually wrong with the telephone, but the subscriber is not satisfied with the tone of the bell, or there is sickness in the family or a new baby is coming and the household must be kept quiet for a time.

The proper adjustment of the ringer at the time the telephone is installed is a very important step. A large proportion of ringer troubles has been traced to unsatisfactory operation of the ringer because of bell tapping when dialing from another telephone on the same line, or because of too much or too little ringing volume for the subscriber.

Improper connection of the telephone bell causes tapping of the bell when dialing from another telephone on a party line or from an extension set on the same line. Bell tapping is apt to be quite pronounced in the case of dial sets having ringer and condenser connected in series across an extension line.

Training installers and repairmen to properly adjust telephone bells, particularly at the time of installation or on a maintenance visit for reasons other than bell adjustment will reduce to a minimum call backs for readjusting the bells.

Bell tapping can be corrected in the following manner: After the set is properly connected and the ring comes through satisfactorily, a dial hand test set is connected across the line. The station number is dialed on the test set dial. If the bell taps while dialing, the ringer leads are reversed and the number is dialed again. The bell should not then tap, but if there is still some tinging, the biasing spring should be tightened a little at a time until the bell no longer taps. The spring should not be tightened to the extent that the ringer will not work properly.

Reversing line wires on a 1-party

line telephone is not considered as effective in correcting bell tapping as reversing the ringer leads. Also no attempt should be made to check bell tapping by operating the cradleswitch. This method does not give a positive check as the station bell may tap regardless of the way the ringer leads are connected.

When installing an extension telephone, both the main telephone and the extension set or sets should be checked for bell tapping. On party lines, the telephone bells on each side of the line also should be tested. After testing the ringer operation of the telephone installed for the party line subscriber and correcting for bell tapping, if any, the other party line subscriber should be dialed and asked if he noted any tinkling of his telephone bell. (If the subscriber is not sure the test should be repeated so he can check this condition.) If the party line subscriber reports that his station bell did tinkle, arrangements should be made to go to the subscriber's telephone and remedy the trouble.

KEEP IT SIMPLE, That's a grand rule for anyone to follow in writing. The trick, however, is to make sure you bear in mind that simple can also mean stupid. — *Howard W. Newton.*

On completion of the station installation, the subscriber should be asked if the bell rings all right for him. If the subscriber says the bell is too loud and he wants it softer, the ringing volume may be altered in one of the ways outlined below:

(1) Turn both gongs out until the ringing volume is weakened to the desired extent. Adjust the tension of the biasing spring, if necessary.

(2) Turn one gong out until the clapper strikes only one gong. This reduces the volume about one-half. Adjust the biasing spring tension, if required.

(3) Turn both gongs in until they emit a clicking sound without ringing resonance. Adjust the biasing spring tension, if necessary.

(4) As a last resort, replace the gongs with slotted edge, or other special type of gongs, or apply friction tape to the gongs.

When the subscriber requests a louder tone, one of the following methods may be tried.

(1) Adjust the gongs until the clapper barely clears each gong when the armature is moved into contact with either pole piece of the ringer coils. At this point, it is just possible to see light between the clapper and the gong. (In most instances, it will be found that the ringer has already been adjusted for maxium loudness of the ringing tone, but this adjustment may help in cases where the factory adjustment was not sufficient.)

Fig. 37—Placing the telephone in a drawer to muffle the ring is not a good practice as the hand piece may be knocked off the cradle or the cord may be damaged by the drawer closing on it.

(2) If the foregoing procedure does not increase the ringing volume to the desired extent, and the telephone has a cloth screen over the openings in the sides of the set housing, removal of the screen may increase volume to desired degree.

Some ringers of recent design are constructed with unequal air gaps between the armature and the pole pieces on the ringer coils, accomplished by providing residuals of unequal thicknesses at the contact point of the armature with each pole piece. This is intended to balance the unequal pulls on the armature due to the biasing spring. The spacing between one gong and the clapper is also greater than that between the other gong and the clapper, producing an additional balancing effect. Care should be taken to adjust the gong and clapper clearance on each side to obtain this proper spacing, thus producing a clear ring.

Where possible the armature stroke or spacing should not be altered, unless the ringer is so designed that the gong and clapper adjustment cannot be satisfactorily changed. On

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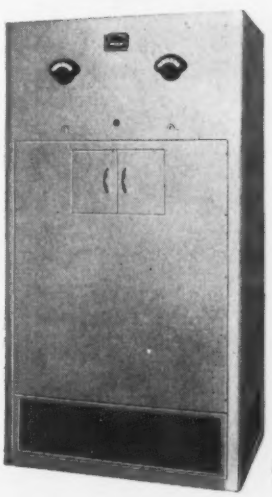
FLOTROL

SENSES THE NEED FOR CURRENT



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It's almost unbelievable, the way the FLOTROL output keeps up with the load current—keeps your batteries fully charged—keeps your exchange voltage right on the dot. What's more, it does all this without the use of any moving parts, vacuum tubes, marginal relays, or the like.

If you're planning to replace or add to your charging facilities, don't overlook FLOTROL'S many advantages. Write for Bulletin 160 for complete information on single phase models, from 1/2 ampere to 24 amperes, Bulletin 161 describes three-phase models from 25 amperes to 200 amperes.

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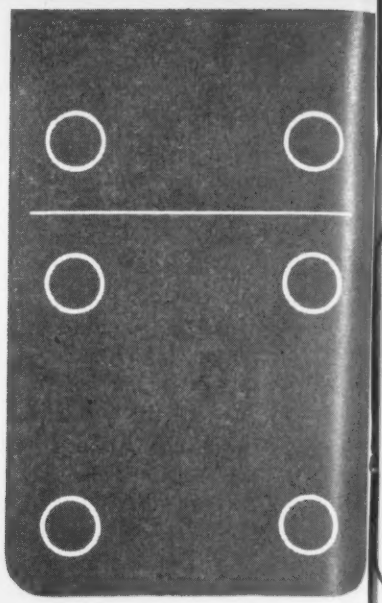


Add DEPENDABLE SERVICE *to a*

Here's the instrument that breathes new life into any magneto exchange.

You save on inventory because the same telephone is either a wall or desk model. No changes or additions are necessary. Remove the generator, change a few wires and you have a modern common battery instrument. Even if your exchange is converted to dial, it's a simple matter to add a dial.

With this Leich 900, you can offer the finest magneto telephone service available. Transmission and reception are the finest your subscribers have ever experienced. The reliable Leich ringer will operate for years without adjustment. And the heavy-duty, Alnico generator furnishes plenty of power for heavily loaded lines.

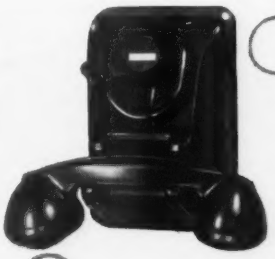
Your subscribers will like the handy generator crank which is located on top like the dial on a dial telephone.

Maintenance expense is cut to the minimum. The Leich 900 magneto telephone is sturdily made of the highest quality materials. Tens of thousands of these reliable telephones are giving dependable service in magneto exchanges all over the United States.

Start now to use this really modern and practical magneto telephone. It's your best investment now. It will save you money when and if you convert to common battery or dial operation. Leich Sales Corporation, 427 W. Randolph, Chicago 6, Illinois.

LEICH MAN

it's a desk model



it's a wall model

remove the generator and you have a common battery telephone

it's easy to add a dial, too

to all these features - -

MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

GENERAL TELEPHONE
TELEPHONE
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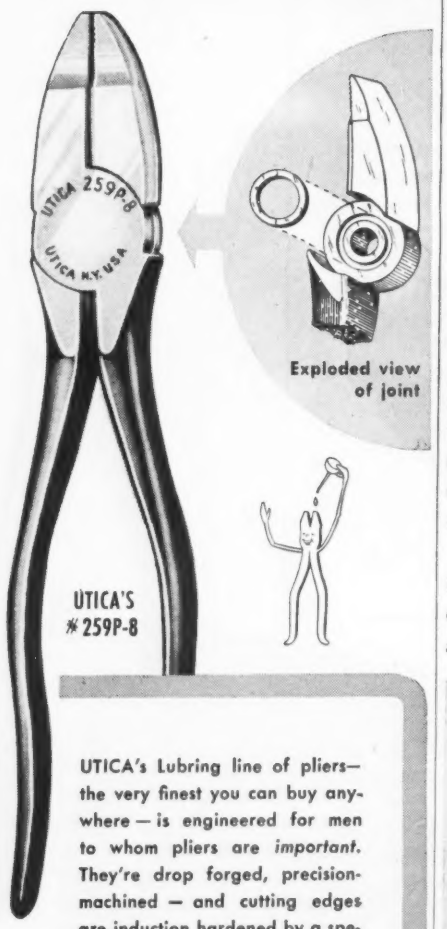
PLIERS THAT OIL THEMSELVES!



UTICA's Lubring line of pliers—the very finest you can buy anywhere — is engineered for men to whom pliers are *important*. They're drop forged, precision-machined — and cutting edges are induction hardened by a special UTICA process.

Each UTICA "Lubring" pliers has a ring of porous iron floating in the joint. This ring serves as a tiny reservoir for oil and releases it to the joint *as it's needed*.

In these days of limited replacements, why not make sure you get the long life and quality that go with UTICA?

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and the world's best tools are made in U.S.A.

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WALLS-IRONS, LTD., WINNIPEG

(Continued from page 55)

some types of ringers the armature stroke is permanently fixed at the factory and cannot be changed.

On recently developed types of handsets, the ringer volume can be changed by the subscriber to suit his individual taste. In one type of telephone set developed for use in the Bell System, the adjustment is made by means of a notched wheel projecting through the base of the set that controls the armature stroke and the gong and clapper clearance. This mechanical adjustment provides four different levels of ringing volume.

The Stromberg-Carlson series 1400 telephone set with straight line ringer (*Figure* 34) obtains a similar adjustment feature by means of a three-positional toggle switch projecting through the instrument base as shown in *Figure* 35. The subscriber can change the signal volume at any time without distortion or unpleasant clatter. This is accomplished electrically by switching fixed resistors in series with the ringer coil.

In the case of ordinary self-contained hand sets, the subscriber can change the tone by leaving the set on a hard surface where the ring is the loudest, by inserting a thin pad under the set to reduce the sound, or by placing the set on a pillow to muffle the ringer even more. This does not impair the efficiency of the set and may eliminate a visit to the premises to adjust a set on a temporary basis. Where the bell box is mounted on a wall, placing a pillow against it will reduce the loudness of the bell. These procedures are illustrated in *Figure* 36. *Figure* 37 shows an undesirable muffling method that should not be permitted.

Cook PLX Terminal For Terminating Plastic Sheathed

THE COOK Electric Company has developed a new compact type of unprotected cable terminal designed especially for plastic sheathed cable. The terminal, illustrated in *Figure* 38, is so constructed as to make it possible to loop the cable through the terminal and at the same time provide a simple and positive means of terminating any number of cable pairs desired with no soldering of connections. The cable chanmber, cover, and bracket are of all metal construction with ample room for the

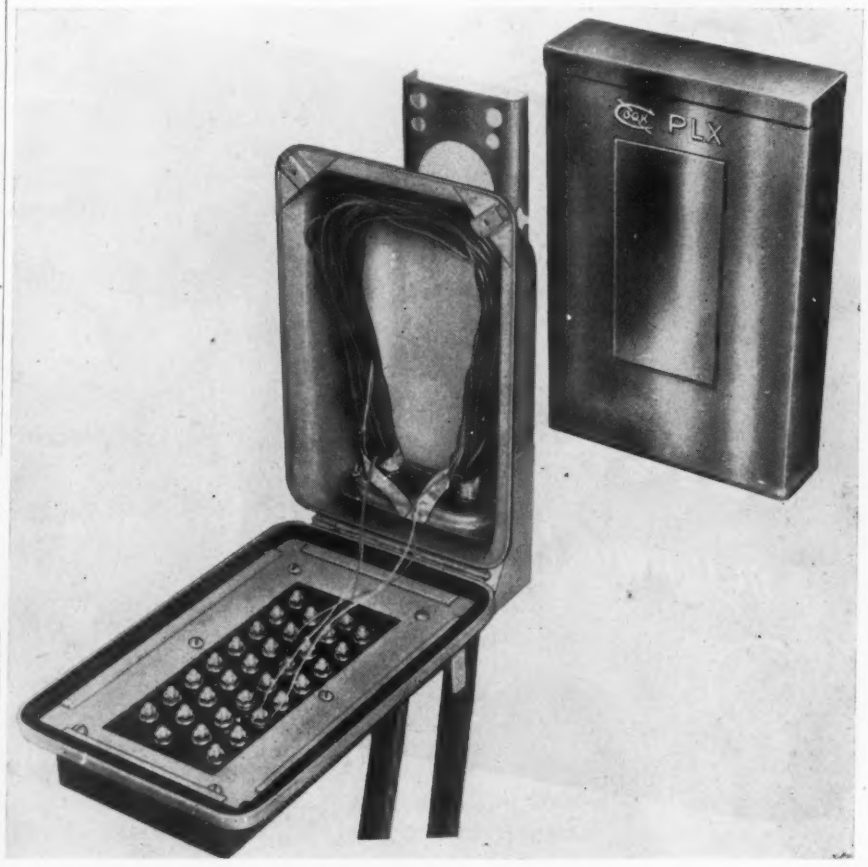


Fig. 38—Cook P-L-X (plastic loop unprotected cable terminal) Terminal designed for use with plastic sheathed cable.

cable, preventing the possibility of shorts and grounds.

This terminal has a high impact, low absorption bakelite face plate of the same type as that used on standard Cook cable terminals. When making connections, the bakelite face plate opens to a horizontal position on a hinge for convenience. When closed, the chamber is sealed against moisture entrance with a heavy neoprene gasket.—THE END.

"Statistically Speaking"

THE editors of "WE," published by Western Electric Co., claims that if you're of a mind to get away from it all, AT&T's *Telephone Statistics of the World* doesn't hold out much hope for you. The Fijis are out; they've got 2,667 telephones. Papua and New Guinea aren't rugged enough anymore either; they boast 1851 telephones between them. The book lists only three countries without telephones. But too many Americans can tell you about the Solomon Islands from experience to tempt anyone in that direction. As for Liberia, there might not have been telephones there on January 1, 1952, but there are now, a central office having been established and equipped in Monrovia during the last year. That leaves only Pitcairn Island, the rugged parcel of Pacific real estate where still dwell the descendants of the Bounty mutineers. No telephones on Pitcairn — yet.

Despite the fact that the telephone seems to have moved into the Kipling countries (Burma: 5,200), the Stanley-Livingston countries (Nigeria: 12,300) and the Stevenson islands (American Samoa: 297), only six major nations have more than 15 telephones for every hundred people; the U. S. (29.3), Sweden (25.2), Canada (22.1), Switzerland (19.9) and Denmark (17.5), Interesting note: the USSR had 861,181 telephones (0.5 per 100 population) — but as of January 1, 1936, "latest official statistics!" However many telephones the Soviet has today, they are no longer described as "connecting with Bell System." Which brings up a question: Whatever happened to that gentleman out in Ohio whose hobby it was to call Kremlin 1 (or whatever it was) and ask for Mr. Stalin?

The talkingest town in the world — where else? — Washington, D. C., with 63.9 telephones per hundred population. Ranking second among U. S. big cities in telephone development comes San Francisco (54.3). New York has more telephones than anybody, 3,349,000 (42.1 per 100 population). Greater London has 1,700,000 phones serving some 8,380,000 people. Among the world's great capital cities only four exceed the U. S. average of telephone development (29.3 phones per 100 people). They are Stockholm, Ottawa, Bern and Copenhagen. Wellington, New Zealand, comes close.

That's about the way the world shapes up telephone-wise. 3.3 telephones for every hundred of us on all the continents and all the islands of all the seas. The "take-me-somewhere-east-of-Eden" spirit may have suffered some disillusionment in the process, but the story has elements of romance of its own — in the fulfillment of a dream: ". . . in the future, wires will unite different cities, and a man in one part of the country may communicate by word of mouth with another in a distant place." Mr. Bell wrote that in 1878.

So. Bell Plans To Buy Competitive Exchange

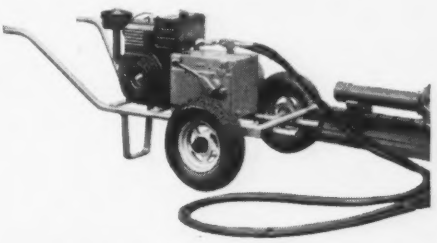
A PROPOSED acquisition by the Southern Bell Telephone & Telegraph Co. of the Fair Hall Telephone Co., Kenton, Tenn., submitted by Southern Bell to the FCC last month, would end one of the few remaining instances of competitive telephone service in a single exchange area.

The Fair Hall company, owned by Ralph W. Tilghman, is a former farmer's mutual association acquired by Mr. Tilghman in January, 1948, and is a connecting carrier serving approximately 225 customers in one exchange area in Obion and Gibson Counties, Tenn. While a traffic agreement with Southern Bell provides Fair Hall subscribers with toll service, no exchange connections exist between the two companies in Kenton, and a subscriber of either firm there at present wishing to communicate with a subscriber of the other must have service provided by both companies.

The contract of sale of the small Independent, involving a payment by Southern Bell of $3,000, has been approved by the Tennessee Railroad and Public Utilities Commission.

SAVES HOURS, REDUCES COSTS ON UNDERGROUND PIPE INSTALLATIONS

Here's the modern, *fast*, low-cost way to install pipe under the ground for your telephone cables.
With a GREENLEE Hydraulic Pusher, *one man* pushes pipe *under* streets, walks, floors, railways and other obstacles. Eliminates time-consuming and costly tearing up, tunneling, backfilling, repaving. No extensive trenching needed, as short opening accommodates the GREENLEE Pusher. Often pays for itself on the first few jobs. Two models: No. 790 for pushing 3/4" to 4" pipe, No. 795 for large ducts and pipe larger than 4".



POWER PUMP for all models of GREENLEE Pipe Pushers. Makes the toughest pushing jobs simple, fast for *one man*. Average pushing performance: two feet per minute. Write today for complete details on timesaving GREENLEE Hydraulic Pipe Pushers.

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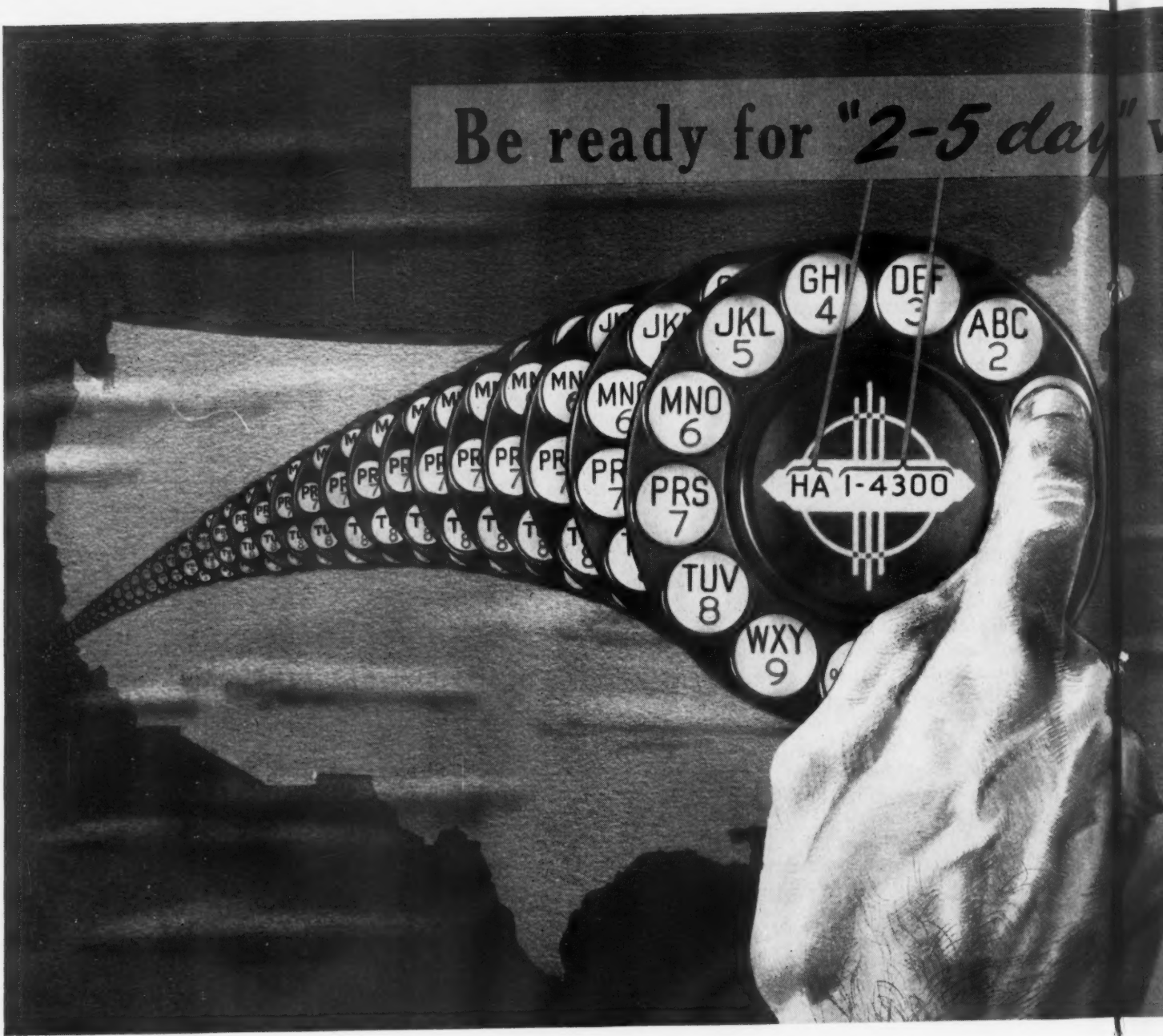
GREENLEE

GREENLEE TOOL CO., DIVISION OF GREENLEE BROS. & CO.
2006 Columbia Avenue. Rockford, Illinois



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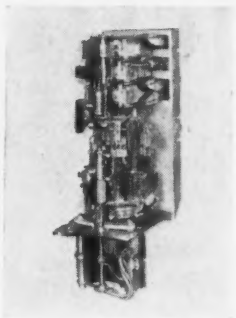
WORLD FAMOUS FOR DEPENDABILITY

...with STROWGER AUTOMATIC!



When Nationwide Toll Dialing comes to you with its "2-letter, 5-figure" numbering, your *Strowger Automatic* exchange will be ready! A special "digit-absorbing" 1st selector switch will tie your equipment into the "2-5" system perfectly.

If you're converting to automatic and want "2-5" numbering, just specify "digit-absorbing" 1st selectors in your order.

If you now have Strowger Automatic, you will normally be able to adapt to "2-5" by simply removing your present 1st selectors, and jacking "digit-absorbing" switches in their places. (No shelf, bank, or wiring changes.) Then, as you require, you can *re-use* your present 1st selectors as 2nd or 3rd selectors!

With Nationwide Toll Dialing coming, telephone men know that their safest investment is Strowger Automatic. Its highly flexible circuits make changing of trunking schemes an exceptionally easy matter and, it meets all supervisory and impulsing requirements.
Let us help you with your plans. Write us today!

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

Section XVI of Mr. Reed's article discusses — (1) Routine tests of dial switching equipment, and (2) Method of using a routine test set.

Modern CENTRAL OFFICE Maintenance

By JOHN S. REED

Routine Tests of Dial Switching Equipment

EQUIPMENT IN dial central offices is vastly more complicated than that in common battery offices. There are many more moving parts such as relay armatures and switch wipers or contact arms, and the wiring is more involved. Pulsing and talking currents pass through various circuits, directed in their paths by the opening and closing of numerous contacts in response to movements of armatures and switches controlled by electromagnets operating by other circuits. Each and every such item is a potential source of trouble. Yet in spite of this complexity, the modern dial switching apparatus is so rugged and so well designed that it will operate under adverse conditions for long periods of time.

The temptation is for the operating company to leave such a marvelous mechanism to run itself and do nothing beyond clearing occasional faults that result in subscriber complaints or are detected by the alarm equipment. Yet experience indicates that it pays in the long run to take good care of the equipment at all times.

In addition to maintenance routines which include inspection and cleaning, there is a procedure intended to detect incipient faults. This method, termed routine testing as distinguished from fault testing, consists of operating each item of equipment under artificially created adverse conditions and noting its behavior. Any item found not up to the standard is considered as ready to fail and it is busied or otherwise taken out of service until it can be readjusted or repaired, or else is removed and sent to the factory.

The routine testing procedure differs with the type and make of dial testing equipment. The manufacturer sets up a procedure tailored to each particular type of equipment manufactured and provides printed instructions describing the proper procedure to follow. The frequency of routine testing is controlled by the operating company. Experience will indicate how often the dial switching equipment should be tested in this

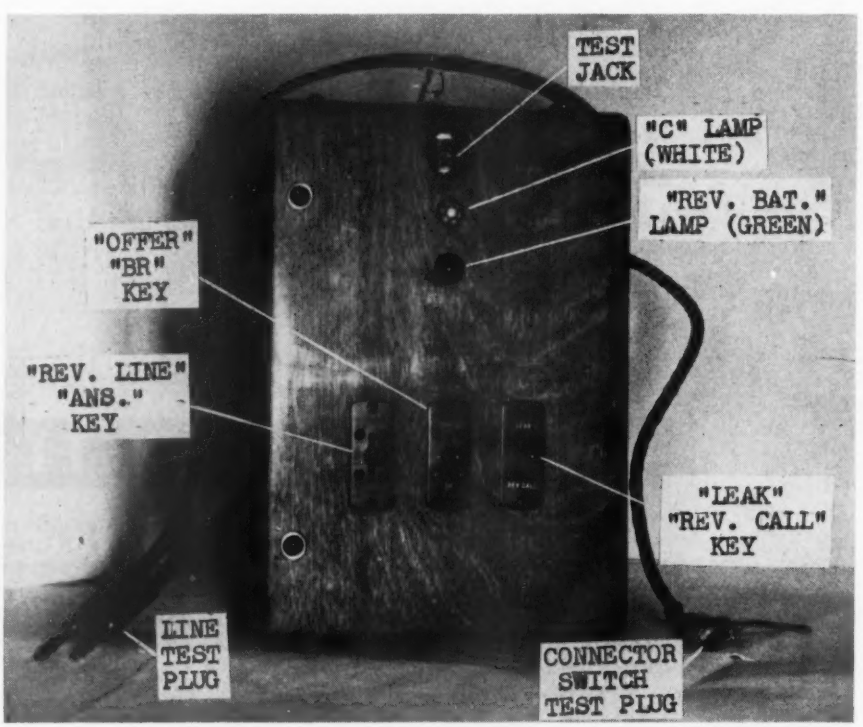


Fig. 251—Automatic Electric connector test set for small automatic offices

manner. In large offices these tests may be performed daily while in unattended exchanges once a week may be adequate. Some companies may lean to fairly infrequent routine tests, as long as there is an economical balance between routine testing and fault testing and clearing. No routine test procedure, however, should be omitted, particularly when they are specified by the manufacturer and the proper test equipment is available.

Method of Using a Routine Test Set

TO ILLUSTRATE how routine testing is performed, we will discuss a typical procedure followed by an operating company in using an Automatic Electric connector test set (Figure 251) designed for testing connector switches in step-by-step community automatic exchanges. The following tests can be made with this set:

1. Loop pulsing, ringing, and ring back tone test
2. Ring cut off, transmission, and reverse battery test
3. Disconnect supervision and supervisory No. 1 test
4. Release by last party and supervisory No. 2 test
5. Leak pulsing and busy test
6. Toll offering test
7. Reverting call test

The routine test set used for testing connector switches in each switch group as illustrated in Figure 251, consists of relays, keys, and resistances mounted in a box for performing the tests listed above. Indicator lamps are a white "C" lamp for indicating when the connector switch under test has been seized and is ready for operation, and a green "Rev. Bat" lamp to show reversal of the battery supply (subscriber answers the telephone).

A hand test telephone is used with this set. This is a dial type hand telephone equipped with two push buttons, one to cut a 1,000 ohm resistance in series with the dialing circuit of the set, and the other to cut in a condenser to enable monitoring a subscriber's line without interfering with dialing pulses. This other button is also used to open the test circuit to release a switch connection.

The routine test set is connected to battery and to a test line from the connector banks. The line test plug is plugged into the jacks of the connector test number (99) at the end of the connector shelf (Figure 252). The connector switch test plug of the set is inserted into the test jack of the connector switch under test. The hand test telephone is also plugged into the test jack in the panel of the test set.

Fig. 252—Maintenance man using connector test set to check condition of connector switches. Black arrow points to line test plug in group test jack and white arrow indicates lighted supervisory lamp on connector shelf.

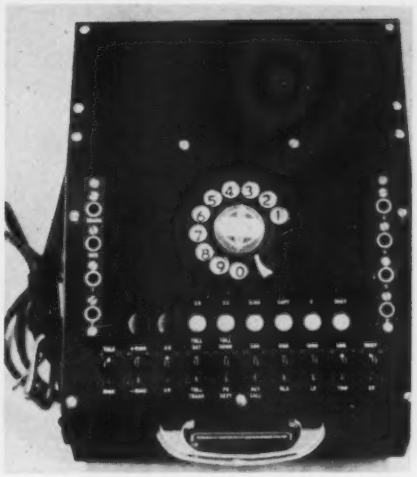


Fig. 253—Automatic Electric portable test set for testing local, toll, and combination connectors, paystation repeaters, toll transmission switches, and reverting call switches. This unit is designed for use on rolling ladders in offices with high switch bays.

The "C" lamp on the test set will immediately light, unless the step-by-step equipment is of a type that requires a preliminary ground on its control trunk before dialing. In this case the lamp will not light until the "Offer" key of the set is operated momentarily.

For the loop pulsing, ring, and ring back tone tests, the test number "99" is dialed on the hand test telephone with the resistance in the telephone cut in during dialing to simulate long loop conditions and check the response of connector switch to this adverse condition. An audible ringing tone will be heard in the receiver. At the same time the set will emit a buzzing sound during the ringing intervals. By operating the proper keys in the set, ringing across the line or between either side of the line and ground can be checked. Where multifrequency ringing is employed, the ringing frequency can be easily recognized by the pitch at which the relay in the test set vibrates.

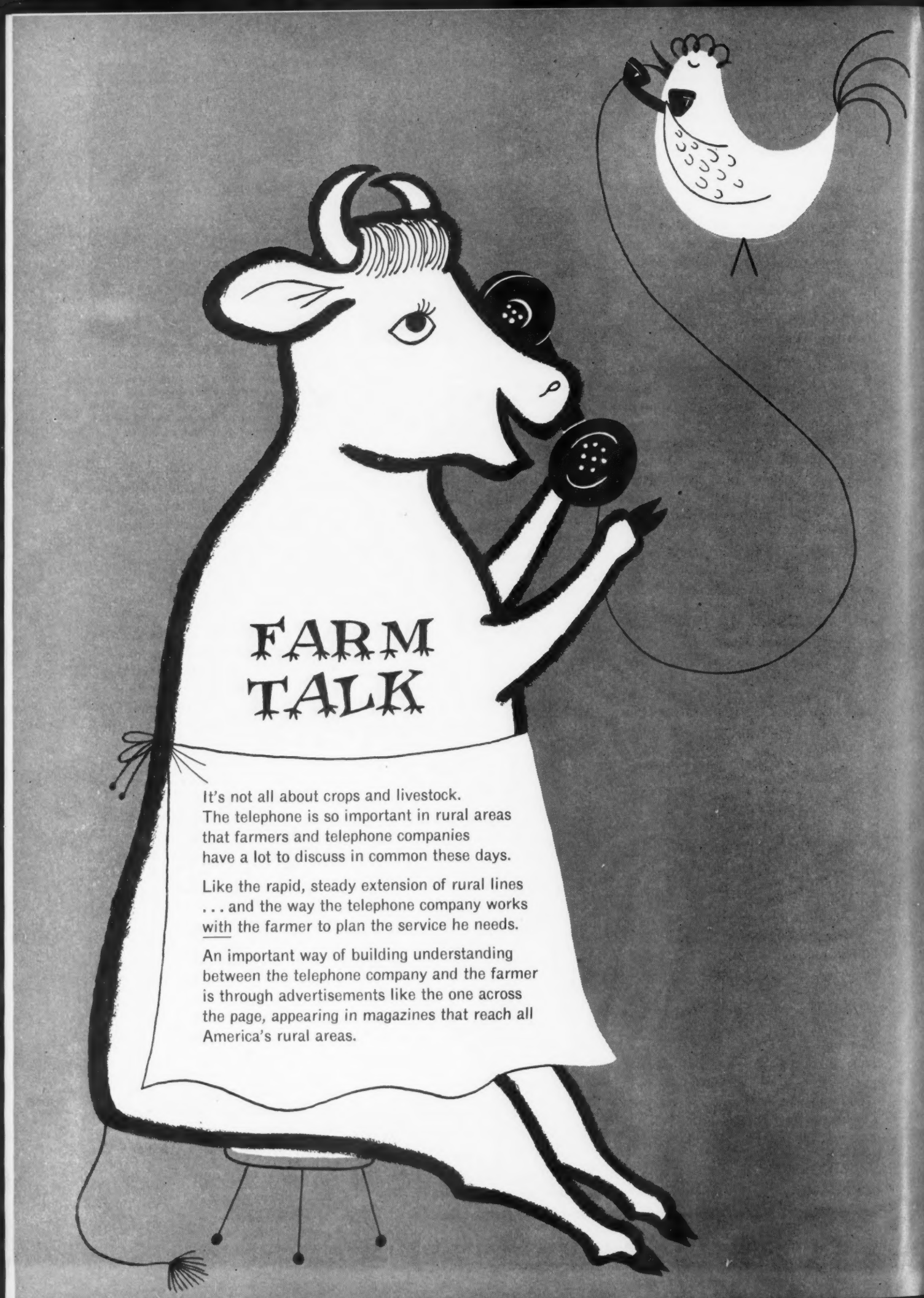
When testing frequency or code selecting connectors, a digit is added either before or after the regular test number to select the side of the line and the different ringing frequencies or codes desired, depending on the type of connector circuit employed. A different digit should be used each time the routine is performed and observation made for the correct code or frequency. This permits all codes or ringing frequencies to be checked on a given number of tests.

For the ring cut-off, transmission, and reverse battery test, the "Ans." key is operated. This operation extinguishes the "C" lamp and lights the "Rev. Bat" lamp. At the same time a high-pitched buzzing tone is heard in the receiver, indicating that the talking circuit is completed through the connector switch.

To test the disconnect supervision, the "Ans. Key" is restored to normal. This operation extinguishes the "Rev. Batt." lamp and lights the "C" lamp. At the same time, the No. 1 supervisory lamp in the connector shelf glows, indicating proper operation of this feature.

The "last party release" or supervisory No. 2 test is made by operating the "Ans." key again. The "C" lamp goes out and the "Rev. Batt." lamp comes on. The No. 1 supervisory lamp goes out, too. With the "Ans." key still operated, depressing the condenser push button in the hand telephone set should not cause the connector switch to release but should bring in the No. 2 supervisory lamp on the connector shelf. Then, keeping this button depressed, the "Ans." key is thrown. This opera-

(Please turn to page 66)


FARM
TALK
It's not all about crops and livestock.
The telephone is so important in rural areas
that farmers and telephone companies
have a lot to discuss in common these days.
Like the rapid, steady extension of rural lines
. . . and the way the telephone company works
with the farmer to plan the service he needs.
An important way of building understanding
between the telephone company and the farmer
is through advertisements like the one across
the page, appearing in magazines that reach all
America's rural areas.

"MR. TELEPHONE" *of Calvert County*

1 We'd like to have you meet Thomas H. Williams, manager of the Bell Telephone exchange at Prince Frederick, Maryland. He was born and raised and has worked for forty years as a telephone man right there in Calvert County.

2 Here you see Tom Williams talking crops and markets with County Agent Hall. Note "hands" of prize tobacco. "Mr. Telephone" and "Mr. Tobacco" are two of the most important men in this area.

3 The curing barn of Wilfred Cox; shows how Tom gets close to his job and his farm customers. He's an all-round telephone man — installs and repairs telephones, manages things in the telephone office. Service has grown from 700 customers to more than 1200 in eight years.

Tom Williams is just one of many thousands of telephone people who take a personal interest in doing a good job for both customers and the community. It's a bigger job now because we've added more than two million telephones in Bell rural areas since 1945 and we're putting in more every day.

BELL TELEPHONE SYSTEM

When Life's at Stake Rely on...

KLEIN

Show the familiar Klein trademark to the old-timer on the pole and he'll tell you—"that's the equipment I've been using ever since I was a grunt."

Yes, workmen just naturally feel safer when the equipment is Klein—recognized for quality "Since 1857."

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Foreign Distributor: International Standard Electric Corp., New York.

Write for your free copy of the Klein Pocket Tool Guide today!

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(Continued from page 63)

tion should cause the connector to release and extinguish the supervisory No. 2 lamp.

The leak pulsing and busy test is made by operating the "leak" key, causing the test line to be made busy through grounding of the control normal lead in the switch. (If necessary, the "Offer" key is also operated, momentarily, to ground the control normal lead.) This act extinguishes the "Rev. Bat." lamp and lights the "C" lamp.

The hand test telephone is then used to dial the test number "99" to establish the necessary connection to the test line. A resistance connected across the test telephone leads by the operation of the "Leak" key simulates a low resistance leak to check the operation of the connector switch under this abnormal condition. When the switch makes connection to the test line, the busy tone is heard, indicating this feature to be operating satisfactorily.

When toll offering service is provided, proper operation of this feature is checked by operating the "Offer" key momentarily to ground the negative side of the line. This causes the connector to remove the busy tone. Restoring the "Leak" key to normal then causes the connector switch to pass ringing current into the line producing an audible buzz in the set. Depressing the condenser button in the hand test telephone should then cause the switch to release and extinguish the "C" lamp.

In the reverting call test, the "Rev. Call" key is operated and the "C" lamp lights. The hand test telephone is used to dial the reverting call number to establish a connection to the reverting call equipment. The condenser push button in the test telephone is depressed to open the circuit. The reverting call equipment then transmits ringing current into the test set, producing an audible buzz.

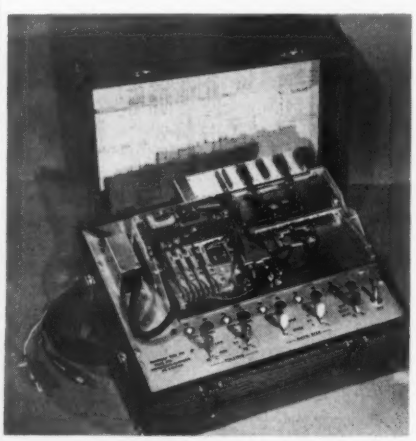

Fig. 254—Stromberg-Carlson XY switch test set

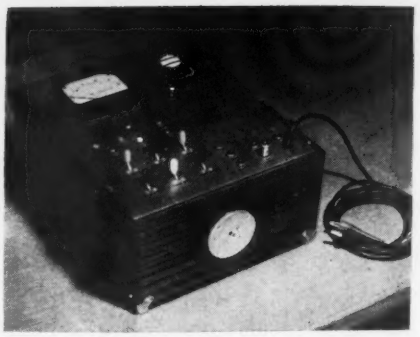

Fig. 255—Stromberg-Carlson maintenance test Set

With the "Rev. Call" key still operated, throwing the "Arts" key cuts off the ringing and a high-pitched buzzing tone is heard in the receiver, indicating satisfactory functioning of the transmission circuit. Restoring the "Ans." key causes the switch to release and extinguish the "C" lamp. The "Rev. Call" key on the set is restored to normal before testing the next connector switch in order.

Other types of routine test sets are illustrated in Figures 253 to 255.

To be continued in the July issue of FORTNIGHTLY TELEPHONE ENGINEER.

Co-ops:

INDUSTRY, KANS. — A state charter with an authorized capital of $20,000 has been granted the Industry Telephone Company. Harold Bolton, Abilene attorney, is resident agent. Bolton expects to start operation about March 1, 1953.

SUN CITY, KANS. — First steps in forming a rural telephone cooperative have been taken by farmers in Barber-Pratt County, Kans., sector, and several officials of *Ninnescah Rural Electric Cooperative*, who outlined plans at a meeting held at Sun City school, recently. Ten men were elected to a board of trustees to hasten the project.

Board members chosen were Melvin Schrepel, Otis Shore, Jim Mitchell, A. H. Kamiska, Willis Wernick, Govan Mills, Charley Smith, Robert Knowles, Doug Goff, Roy Platt and Hully Hoss.

90% of Florida Phones Dial Operated

THERE AREN'T many places left in Florida where you hear "Number, please" instead of a dial tone when you pick up the telephone.

However, it may be a good while yet before local operators are completely replaced by dial service in Florida.

P. M. Schuchart, director of the public utilities department of the Florida Railroad and Public Utilities Commission, recently said about 90 per cent of Florida's some 800,000 telephones now are dial operated.

Users of about eight percent of the state's telephones have common battery service. The other two per cent have magneto service.

Most Florida cities of any size, have dial systems. Smaller towns like Live Oak, Dade City and Winter Garden still use local operators.

A telephone company serving a big city can't afford to be without dial service because of the cost of hiring operators to handle thousands of local calls, Schuchart said.

What's preventing extension of dial service to every telephone in the state? In the first place, said Schuchart, telephone engineers qualified to switch exchanges over to dial operation, are almost impossible to find.

There's a shortage of material for the changeovers. For instance, manufacturers are quoting delivery dates more than two years away for dial equipment. And finally, such changeovers are costly and some telephone companies say they can't afford to make them.

Lots of people worry about what happens to the local operators when the changeover to dial service is made in a community.

Schuchart said very few are put out of work. They become long distance operators, information clerks—or go to work in the business office of their company. In any case, the turnover in operators is high and often all the company needs to do is just stop hiring for a while.

Florida telephone service—dial and otherwise—is expanding tremendously, Schuchart reported. Southern Bell, biggest of the state's 29 telephone companies, added 54,000 subscribers last year. The Miami telephone exchange now is the largest in the South, outstripping even Atlanta and New Orleans in number of telephones.

YOU get all THREE with

YORK-HOOVER UTILITY BODIES

Quality, Performance, and Cost-Saving Efficiency

QUALITY . . . because part-by-part, York-Hoover Utility Bodies are fabricated from top quality materials by expert craftsmen. This means that when you buy York-Hoover Bodies you not only get a quality product at a fair price but a product that gives top performance besides.

PERFORMANCE . . . because each York-Hoover Body is specifically engineered for the job to be done. This, together with the factors of stability, minimum weight, ease of maintenance, and the ability to "take it" in everyday service, makes York-Hoover Utility Bodies the best buy for you.

COST-SAVING EFFICIENCY . . . is the end result . . . the reason why for over 60 years customers from coast to coast have relied on York-Hoover Equipment to give them top performance, low operating and maintenance costs. Enjoy all 3 in '53. Buy York-Hoover Utility Bodies!

York-Hoover Corporation

YORK, PENNSYLVANIA

Body Division

BECOME AN EXPERT IN CABLE PLANT CONSTRUCTION

—and earn an expert's pay!

Have you noticed the men who are drawing the big salary checks from telephone companies today? The men the big companies are searching for — offering high wages — attractive vacations — extra benefits, etc., etc. Who are the men who work hours no longer than you . . . who have the nicer homes, the newer cars and more money to lavish on their families? In nine times out of ten it's the EXPERTS — men who have more skill or special knowledge than their fellow-employees . . . and in the telephone construction business it's usually the skilled cable man.

YOU **Can become an expert in Cable Plant Construction without giving up your present job and pay check**

TELEPHONE ENGINEER & MANAGEMENT

is going to publish another outstanding training course entitled

"CABLE PLANT CONSTRUCTION"

This new training course has just been prepared for exclusive publication in TELEPHONE ENGINEER & MANAGEMENT by Mr. John S. Reed, one of the industry's leading telephone engineers. The course has been written in easy-to-understand language, is profusely illustrated with drawings and illustrations and thoroughly covers all phases of cable construction as evidenced by the table of contents in the adjoining left column.

This course should prove invaluable to new employees . . . a step to higher wages for many less skilled employees . . . a handy reference book for men who have been handling construction for years . . . and most useful for companies desiring to conduct training courses on the subject.

The course will start in the July 15 issue of TELEPHONE ENGINEER & MANAGEMENT and will consist of 9 chapters. A chapter will be presented in each monthly issue until completed. At the end of each chapter Mr. Reed has prepared a series of questions for the student to answer in order to review his studies. These questions have been prepared to aid both the individual student or an entire class of students. Every student should have his own copies of TELEPHONE ENGINEER & MANAGEMENT for study.

Cost of Training Course **— Absolutely nothing to regular subscribers of TELEPHONE ENGINEER & MANAGEMENT. If you are not a regular subscriber fill in the subscription order form below and send it with your check for $3.00 covering a one year subscription to TELEPHONE ENGINEER & MANAGEMENT, 7720 Sheridan Road, Chicago 26, Illinois . . . TODAY!**

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7720 Sheridan Road, Chicago 26, Illinois Date.....

Gentlemen: I am enclosing $3.00 covering one year's subscription to TELEPHONE ENGINEER & MANAGEMENT. I am anxious to study your new Training Course "CABLE PLANT CONSTRUCTION" so be sure and start my subscription when or before the first chapter appears.

Name (Please Print) ..... Company .....

City or town ..... State ..... Type of work you are now doing .....

Fig. 1—An information operator of the Cuban Telephone Co., is seated before the indexed screen of the microfilm reader. The lever in her right hand controls the speed of the moving film. When the desired section of the filmed directory appears on the screen, the film is stopped and the information is extracted.—(Photo from International Tel. & Tel. Corp.)

TIPS FROM THE FIELD—

HOW-TO-DO-IT SUGGESTIONS

By MYRLE SHAFER

Flying Axe-Head Problem

SOME TREE clearance crews have experienced trouble with axe heads flying off their handles while chopping trees or brush. In such cases tightening the heads by driving in wood or steel wedges does little good. Even the time-honored remedy of soaking the axes in a bucket of water to swell the wood has only a temporary effect as the axe heads loosen again when the wood dries out.

It has been suggested that the axes be soaked in a solution of one-half glycerine and one-half water. The glycerine tends to prevent drying out of the wood and thus keeps it from shrinking completely back to its original size.

A special solution intended for repairing loose rungs on chairs by swelling the wood in the joints and making them tight may be tried for retightening loose axeheads or poorly fitting wood handles on other kinds of tools. This solution is available on the market under the trade name of Chair-Loc. This liquid is applied through the loose fitting joint without dismantling the tool and will cause the wood to expand inside the joint.

New Directory and Information Service

A COMPLETE, accurate telephone directory reproduced on microfilm provides the Information Service operators of the Cuban Telephone Company with new telephone listings a few hours after changes have been made and, in its preparation, also provides the material for the printing of the actual directories furnished to subscribers.

The International Telephone & Telegraph Corporation has collaborated with the Cuban Telephone Company and Remington Rand, Inc., in the development and application of this new and comprehensive directory and information service in the Havana offices of the Cuban company. Although other telephone organizations have used separate phases of the system for some time, this installation is the first integration by a telephone operating company of all the associated processes into a continuous, coordinated operation.

Briefly, the system utilizes narrow cards on each of which is typed a subscriber's telephone listing. These cards are inserted in alphabetical sequence in a three-column metal frame or rack, which, when completely filled, constitutes a page in the telephone directory. When the directory is scheduled for printing, these frames are arranged in page order, photographed, reproduced by the photo-offset lithographic process, and bound for distribution. The same procedure is applied to the classified section of the directory. In addition to effecting great savings in time and money, the new method produces a far more accurate directory than before because it eliminates the need for checking printer's proofs and permits the preparation of the original copy, which is also the final copy, by telephone personnel in the directory department.

Between directory issues, the racked cards, which are corrected by merely inserting or removing a typed strip, are posted as often as desired and are used to supply the company's telephone operators with up-to-date subscriber telephone number information. The corrected card panels, photographed on microfilm and distributed to the operators' positions, are placed on reels in microfilm readers to which the necessary telephone circuit equipment has been added. Future installations will employ a complete switchboard-reader unit, now under development by the Kellogg Switchboard & Supply Company.

The reader projects the power-driven film onto a desk-type screen before the operator. This screen has a numerical index in the left margin and an alphabetical index in the right margin. Moving at a high rate of speed, controlled by the operator, the film appears on the screen as an illegible blur of type broken only by a dark horizontal line. This line, achieved by inserting a colored card strip at specific points of demarcation prior to photographing the original card frames, is clearly visible to the operator as it moves down the screen. When the line coincides

with the first letter of a subscriber's name in the alphabetical index, the film is slowed sufficiently to enable the operator to read a further breakdown of the name at the bottom of the frame. The film is then stopped and the information is extracted. This procedure has been designated the Visual Linear Index System, a patent for which is now pending.

As an adjunct to the alphabetical listing of subscribers, the telephone company has compiled and photographed another complete Information Service record wherein each subscriber is listed by street address to facilitate—particularly where there are many individuals with the same last name—the furnishing of correct information to the inquirer. This supplementary record appears on the viewing screen as a continuation of the alphabetical section, and the Visual Linear Index System is again used for scanning by utilizing the screen's numbered left margin, which is set up in code to designate sections of the city of Havana.

Officials of the Cuban Telephone Co., state experience to date confirms that the new system provides a rapid, accurate and flexible method for preparing and controlling the directory copy and Information Service material in the telephone company's own offices; for economically keeping this material up-to-date; and for producing the printed directory and the microfilm telephone number information with a minimum of delay.

Kite for Stringing Line Wires over River

WHEN OPEN wires are to be strung over a wide and swift river, it is a difficult job to bring the pulling in line over the swiftly moving waters by ordinary means. The simple kite shown in *Figure* 2 can be constructed to save time and effort in bringing the line across.

The slanting cross plank and the fixed rudder causes the keel plank of the kite to assume a constant angle to the stream and the kite is made to float across at an angle to the stream. The ballast is made just heavy enough (about five or six pounds) to keep the rudder end from riding out of the water.

Ordinary steel line wire is convenient for the tow line as it can be paid out from a standard reel and thus

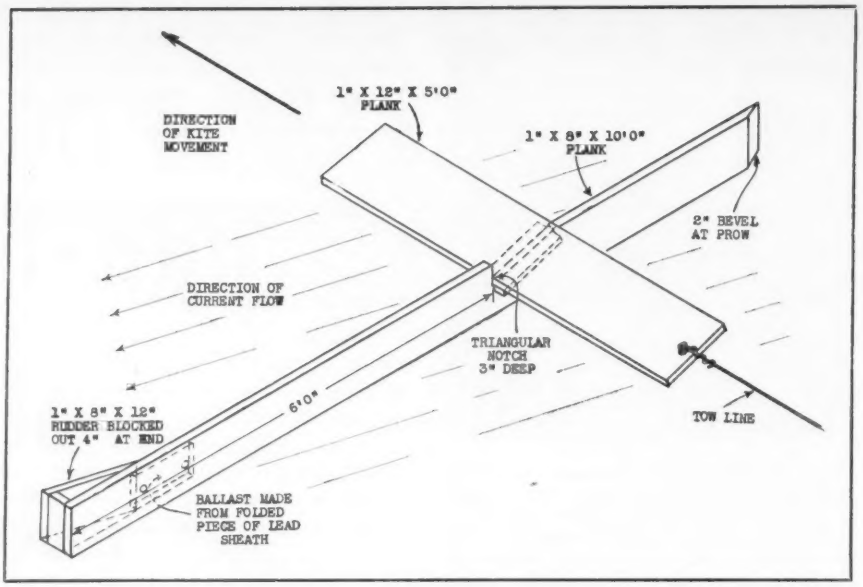
DIRECTION OF KITE MOVEMENT
1" X 12" X 5'0" PLANK
1" X 8" X 10'0" PLANK
2" BEVEL AT PROW
DIRECTION OF CURRENT FLOW
TRIANGULAR NOTCH 3" DEEP
TOW LINE
1" X 8" X 12" RUDDER BLOCKED OUT 4" AT END
6'0"
BALLAST MADE FROM FOLDED PIECE OF LEAD SHEATH

Fig. 2—"Kite" for carrying tow line over a swiftly moving stream to pull in open wire at a river crossing.

kept under control. To prevent the kite from slewing around in the current, the line should be kept taut as it is let out by braking the reel. If the current flow is too strong, the wire will have to be snubbed around a post.

To avoid interference from the river flow, the tow line should not be allowed to dip in the water. Where the bank is low, it may be necessary to set a pole with a snatch block attached at the proper height to support the line above the water.

As illustrated, the kite is designed to float in the direction indicated when the water flow is from right to left. If the flow is in the opposite direction, the kite is constructed with rudder and ballast placed on the near side of the plank and the bevel at the prow on the far side, in the reverse position from that illustrated.

In an emergency, a fairly serviceable kite can be constructed by nailing a 2″ x 10″ x 6′0″ plank in an upright position and at 45 degree angle to two crossarms fastened together side by side. The crossarms serve as a raft and the plank underneath as a rudder. A tow line is attached to the lead end of the raft and a rope bridle is run from a point 3 feet back on the tow line to the rear of the raft. This bridle holds the raft in such a position that the rudder is always at an angle to the water flow. The resulting pressure on the rudder moves the kite at an angle down the stream to the opposite bank.

Since the kite tends to move down stream as it floats towards the opposite bank, it should be launched at a point high enough upstream to reach the desired point on the far shore.

Use of Plastic-Sheathed Telephone Cable

SINCE THE introduction of plastic sheathed telephone cable, such as Ankoseal, Alpeth and Stalpeth cable lashed to messenger strand by the spinning method, there have been some reports of damage to the smaller sizes of cable up to 26 pairs due to whipping in exposed locations in high wind areas. The Bell system has experimented with several methods of reducing or eliminating the excessive vibration of spans, such as hanging weights from the messenger, guying the messenger strand to the pole, or employing a second messenger located above the spun cable which was strapped to the messenger holding the cable.

In some localities, the vibration was eliminated by slacking-off the spinning wire to obtain a ½″ to 1″ space between the messenger strand and the cable to change the air flow characteristics of the assembly. Another method that has given satisfactory results is to provide rings to suspend the cable from the strand with the conventional 18″ to 20″ spacing and then removing the lashing wire entirely.

The main point to keep in mind in considering the effect of wind on spun plastic sheathed cable in any area is the fact that this phenomenon has been experienced only in isolated

Still in service after 28 years these Dayton Power & Light poles are protected by Creosote Oil

● Not a single failure due to decay—that's the record of 140 poles installed with Creosote Oil protection in 1925 by Dayton Power and Light Company on its Bloomingburg line near Washington Court House, Ohio.

Highway relocations and company developments requiring higher poles have led to removal of many of the poles, but all were reinstalled and are still in service.

Tests, including borings, were made in 1952 on several poles by the Company's Material Research Department. The poles were found to be tough, hard and difficult to bore; penetration at all points was still deep and the general condition of the poles was good.

* * *

This is the kind of service you can expect when your poles and crossarms are pressure-treated with Creosote Oil. And it is the reason why Creosote Oil is the most-used wood preservative.

For Creosote Oil that is always uniform in quality, ask your treater to use U·S·S Creosote Oil. For complete information, contact our nearest Coal Chemical sales office or write directly to United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

DATING NAIL on one of the poles indicates it was first put into service in 1925.

CLOSE-UP of one of the poles at the ground line showing its excellent condition.

PRESSURE-CREOSOTED southern yellow pine poles in the Bloomingburg line of Dayton Power and Light Company near Washington Court House, Ohio.

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By saving lives, by easing pain, by improving services to cancer patients, by supporting research that will find the final answers to cancer . . .

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Give to conquer cancer

American Cancer Society

cases where the cable has been installed in exposed locations subjected to sustained wind loads. Further, in any plant where whipping has been experienced only a few spans have been involved and, therefore, the problem is not as serious as first expected. Another thing to note is that in no case reported to date has a cable failure resulted on spans that have whipped due to wind, thus providing adequate time to take corrective measures without entailing any circuit outages.

In view of the foregoing, the Ansonia Wire and Cable Company recommends the installation of any size of Ankoseal telephone cable, including 6-to 26-pair even in areas where whipping might occur. It is difficult to determine in advance whether any trouble will be experienced from this source, and the manufacturer states that sufficient economic gains may be realized in the installation of the cable to more than offset the cost of relaxing the spinning wire or replacing the wire with rings on the few spans that might be involved. The chances are that no difficulty will occur since large quantities of Ankoseal telephone cable has been spun to the messenger in all sections of the country and the number of installations reporting wind whipping has been extremely small.

The Diesel Engine Idea for Emergency Generators

SEVERAL YEARS ago, Bell Telephone Laboratories undertook a program to provide a dependable power source during long periods of commercial power failure. A few hours' service is provided by central office batteries but commercial power failure beyond this time would render the office inoperative.

To carry out this program the engineers at Bell Telephone Laboratories developed standby generator sets for installation in central offices. These first standby sets were gasoline engine powered. However, gasoline engine driven sets proved impractical in some installations, due to danger from fire and explosion in heavy populated business areas. Then too, larger generator sets were needed for many exchanges. Diesel powered generator sets proved to be the next logical step in the standby equipment program, but many diesel engines were too bulky and too heavy for the horsepower produced.

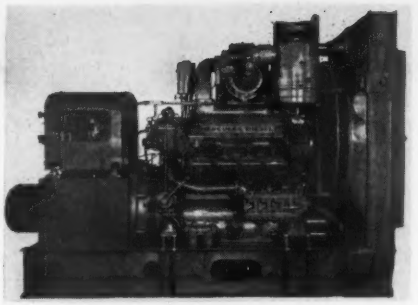


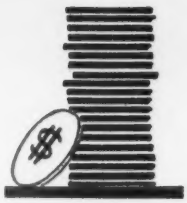
Fig. 3—Hercules Model DNXV8DTS diesel engine for driving 170KW alternator.

To power a standby generator set in the 150-200 KW range, a compact, lightweight, heavy-duty diesel engine which would produce approximately 500 horsepower was needed. Previous experience with smaller, 20KW automatically operated, standby diesel generator sets used in connection with coast-to-coast T. V. and radio relay, helped solve the space and weight requirements. These Hercules diesel powered radio-relay standby sets proved highly satisfactory and their compact design permitted installation in limited spaces.

For an alternator in the 150-200 KW range the Hercules diesel engine. Model DNX-V8DTS was selected to drive a 170 KW alternator. This Vee-type, 8 cylinder, diesel engine develops 295 horsepower at 1200 R.P.M. and its compact design and light-weight, heavy-duty construction meets weight and space requirements.

The 170KW generator is set fully automatic in its operation. In event of local power failure, a switch is activated which starts the diesel engine and then cuts the generator set into the power supply line for the telephone exchange. As soon as local power is restored the automatic control starts a timer which continues the office load on engine power for a predetermined time to be sure the power restoration is permanent. At the end of that time the load is transferred back to the local power supply and the engine stops. This particular application is one of the first fully automatic diesel sets of this size. (Previously gasoline and small diesel sets have been equipped for automatic operation.)

The Hercules diesel powered standby equipment can also be used to operate lights, elevators, pumps and similar telephone exchange building services during emergencies.



"The important thing about a problem is not in its solution but in the strength we gain in finding the solution."

THE MANAGEMENT FORUM

Conducted by JOHN G. REYNOLDS

"The Disabled Can Work"

THE PROBLEM: Hiring a disabled person for a telephone job.

THE SOLUTION: We took the reader's letter suggesting this topic for a Management Forum discussion to the *Health Resources Advisory Committee* and we learned that many companies are whipping serious manpower shortages by hiring disabled workers.

We learned many other things. Namely: (1) Many physical or mental handicaps can be eliminated through rehabilitation services or reduced to the point where they do not interfere with the work demands of a properly selected job; (2) when the disability has been properly treated and the person properly trained for and placed in the right job, he can do that job as well as anybody; and (3) production records of thousands of physically and mentally handicapped persons in wartime industry prove this. This proved to us that—*It's not what a man has lost, but what is left that counts!*

For example, a two-year study, made by the Department of Labor and the Veterans Administration, and based on industry's own records, comparing the work experience of two groups—11,000 handicapped and 18,000 matched non-handicapped workers—showed that handicapped workers:—

(1) *Come to work as regularly*: Days lost per 100 scheduled work days were 3.8 for handicapped and 3.4 for non-handicapped workers. Absentee rates were practically the same when the reasons for absence were considered.

(2) *Stay on the Job as long*: A follow-up study six months after the survey indicated that 3.6 per cent of the handicapped and 2.6 per cent of the non-handicapped workers had voluntarily quit their jobs.

(3) *Have safety records as good*: The disabling injury frequency rate per million exposure-hours was 8.9 for handicapped and 9.5 for non-handicapped workers. For non-disabling injuries the rates were the same for both—9.9.

(4) *Have production records as good*: The handicapped had a somewhat better production record than the non-handicapped workers. Relative output was 101 for the non-handicapped and 100 for the non-handicapped. Of the handicapped group, 73 per cent produced at a rate as good as or better than their nonhandicapped fellow workers.

Awareness of their handicap often tends to make persons with physical defects have more conscientious attitude toward their work which contributes to a favorite production record.

Employers need not fear increased compensation liability if they employ disabled workmen. The Association of Casualty and Surety Companies has said in a published statement:—"There is no provision in workmen's compensation insurance policies or rates that penalizes employers for hiring handicapped workers . . . Employers have been known to say they could not or would not hire disabled applicants because they had been advised that their insurance costs would be increased as a result. Nothing could be further from the truth."

Every job should be regarded as suitable for some handicapped man or woman until proved otherwise by looking at such factors as whether the job calls for the worker to stand or sit, use one hand or both, use one leg or both, work with his hands and feet together or separately, get from place to place with speed and dexterity or remain in one spot—and then comparing the demands of the job with the worker's ability to meet them.

The personnel and medical departments of many plants now use a selective placement approach, in which the talents, work experience, training, skills, and physical abilities of the person are related to a wide variety of jobs. Assistance in proper placement is available to industry from the State Employment Services and State - Federal rehabilitation programs. One of the services provided is "prescription training"—that is, the training of persons specifically and precisely for the job to be filled. Through advance coordination of plans by personnel directors, industrial physicians, and other concerned, the disabled person can be prepared to fill the actual needs of the firm which is to employ him. The Veterans Administration also helps to rehabilitate and place disabled veterans through on-the-job training programs.

Basic to selective placements is the medical examination. A thorough

examination includes: (1) medical history, (2) physical examination, (3) laboratory studies including X-ray, and (4) personality study of evaluation of emotional stability. By means of the medical examination, an evaluation may be made of the individual's ability and capacity for job performance.

Today, there are at least 2,000,000 men and women who have become disabled through accident, illness, or mental causes to such an extent that their disabilities constitute job handicaps. In addition, 250,000 others probably will become disabled each year.

The cost of this disablement is measurable in terms of not only human suffering and individual deprivation but also a weakening of the general economy. The non-productivity and dependency of disabled members of society weakens our economy and eventually affects all tax-payers, private and corporate alike. For example, in one State, 140 disabled men and women were receiving $92,400 a year in public welfare. The same 140, after rehabilitation and employment, were earning at an annual rate of $156,240. Vocational rehabilitation services can restore the disabled person, but it is up to the employer to give him an opportunity to produce.

From the standpoint of anatomical perfection, practically everyone is handicapped to some extent. Few indeed are they who have no defects whatsoever. To bar from employment those with obvious defects constitutes a disservice not only to those individuals discriminated against but also to the economy. Depriving increasing numbers of our people of their livelihood imposes greater drains on the public assistance funds and heavier taxation burdens.

Jobs For Oldsters

THE PROBLEM: To employ or not employ members of the older working group.

THE SOLUTION: When the letter presenting this problem landed on my desk my first thought was of my own greying temples and a fast-approaching birthday. Then I dug into the subject and I felt better when I discovered that many companies have found employment of the older workers actually represents the reaping of maturity's harvest!

Sure, it's true that as a nation, we have placed sharp accent on youth. We have tended to consider aging as synonymous with disability. Actually, aging is not a state of ill health. Aging is the wages of living.

Today, the steadily advancing age level of our population belies that we are still a nation of young people. In sheer self-defense, if nothing else, we have to reorient our thinking. While the first half of the 20th Century has been called the age of the child, during the next 50 years we will be directing our efforts to make the period of maturity more useful and productive.

Segregating the older worker is wasteful of human resources. It has no place in a complex economy, nor in an aging society with an increasing span of life.

Age itself is relative. In 1900, when the median age of our population was just under 23 years, the person of 45 was in the older age group. Today, however, the median age is just over 30, and in 1975 it is expected to be 34. By 1980, it is estimated that there will be 43 million persons between 45 and 64 years of age, and over 22 million persons past 65. As the age make-up of our population changes, so must our concept of the older person.

Age may be considered as chronological, physiological and psychological. Chronological age is the least important because it merely represents the ticking off of birthdays. Physiological as well as psychological age varies with each individual. Consider, for instance, the Bernard Baruchs, the Connie Macks, the Grandma Moses', and the many telephone men, who are contributing their talents though past three score and ten.

In employment, it is the skill, ability, and work capacity that count. Each worker must thus be considered on his own individual merits instead of an arbitrary chronological basis. Recognizing the fallacy of relying purely on the calendar, certain management and labor leaders are urging that retirement policies be based on the individual's work capacity and desire for continued employment. This is particularly important in view of the increasing life expectancy. In 1900, for example, a worker retiring at age 65 could anticipate three years in retirement. By 1940, he could ex-

(Please turn to page 76)

Construction M
With the Double
and America's
Gu
Le

individual station protector

reliable 955A

MFD. BY RELIABLE ELECTRIC COMPANY

- One-piece Design
- Simplified Mounting
- Asbestos Mats Eliminated

The very simplicity of the Reliable 955A is assurance of long, trouble-free service. Fuses are mounted on a one-piece, low absorption porcelain, well spaced for convenient connecting. Reliable Self-cleaning Sawtooth Discharge Blocks are standard, dissipating static without time lag or danger of grounding the line. The 955A uses No. 77L, seven ampere ceramic fuses.

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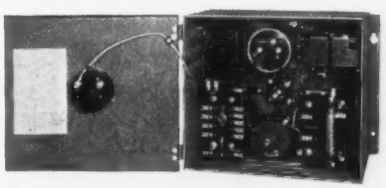
Raytheon RectiFilteRs*!

For more than a decade, leading independent telephone companies have found that Raytheon RectiFilteRs are the most economical and efficient way to supply steady DC power to PBX boards directly from an AC source.

With no moving parts, the Raytheon RectiFilteR requires neither adjustment nor maintenance. It will outlast many sets of batteries, release wires carrying charging current from central office to subscribers' PBX boards for revenue producing service, and minimize power cost because of high efficiency in converting from AC to DC.

Dry disc rectifying units and other components are designed for long-life, trouble-free service. The Raytheon RectiFilteR will end your telephone power problems. Just plug it in, close the door —and forget it!



RFR 1044-GR RectiFilteR with door open

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ANSONIA Ankoseal

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(Continued from page 74)

pect nearly six years in retirement.

The years give as well as take. For physical aging, there are compensations, such as long-maintained skill and an increase in judgment when speed of reaction lowers. There are man-made compensations, too, such as the machine which takes the place of purely physical effort. For every job for which a worker may be too "old," there are a score of others that he can perform.

Older workers can perform competently: Studies show that older workers are more experienced, have fewer outside distractions, are more conscientious, have less wastage, and often are as productive as young workers. Undoubtedly, old age weakens ability on those jobs requiring great energy and speed. But even on such jobs, it has been stated that the decline from age 50 to 75 is gradual and varies with the occupation.

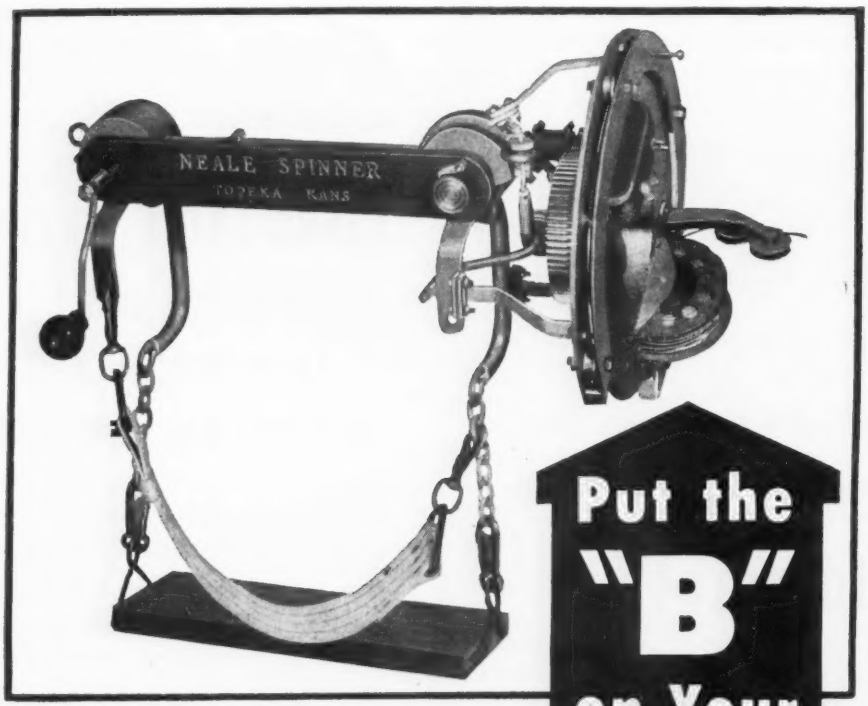
Older workers can perform safely: According to the Bureau of Labor Statistics, a study of work conditions of about 17,000 workers in a variety of 109 manufacturing industries revealed that the only disadvantage of older workers is that their disabilities last longer once they are injured. But on the whole, they are likely to be absent less frequently and less likely to be injured than the younger worker. The older worker's respect for safety practices not only protects him, but also influences his co-workers.

Older Workers contribute to employee morale and productivity: The "old timer" usually has more knowledge of the traditions of the firm, a greater sense of belonging, and a higher sense of loyalty. He inspires confidence and loyalty among the other employees. He is particularly helpful in interpreting to younger employes the changes which the industry has undergone and in helping them to better understand various rules and regulations. The mature judgment and perspective that the older worker has gained through experience enriches the outlook and work of younger employees.

Older workers can do very effective work if the job requirements are matched with individual fitness. Frequently, job placement must be preceded by retraining which will enable the older person to make any adjustments required. State employment services are making special efforts now to counsel and place older workers, and many social agencies are helping in this effort. Through special assistance of this type, two to three times as many older persons can be placed, according to a Bureau of Employment Security study.

By careful study of its job requirements, the conditions of entry, and the productivity of older workers, industry can help provide much-needed information for the proper placement of older workers.

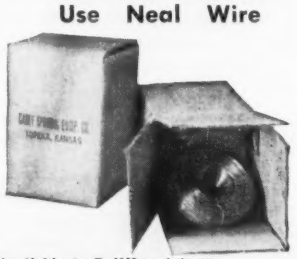
In the older-worker group there is a reservoir of training, experience, and judgment, on which industry and the community can draw to mutual benefit. Industry can help to utilize this growing source of manpower through improved job analysis, counseling, and selective placement procedures, matching the job requirements to the physical, mental, and emotional capacities of the older worker. Through preventive services a growing number of the older workers can be put to work.



Put the "B" on Your Problems

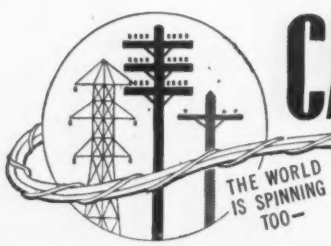
The Neale Model B is designed for one-man operation. It may be used with equal effectiveness for spinning new cable or maintenance spinning of existing cable. This machine is easy to transfer at pole . . . simply by removing the gate in the spinner head. Many telephone companies . . . large and small . . . have reported success in using this cable spinner to reduce outside plant costs and solve problems of new construction and maintenance.

For Best Results Use Neal Wire



Available in 7 different types . . . all made to meet the toughest construction and corrosion problems.

See Your Jobber



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Small Company Talk

By BILL CORMAN

HI, NEIGHBOR! On the bare face of it, a peculiar thing is happening to the small Independent telephone companies.

Fact Number 1: Not for probably 20 to 30 years has the opportunity in the average town been any better for a telephone company there to grow, serve and prosper, than it is now.

Fact Number 2: The small companies are being sold out at a constantly accelerating rate.

These companies are being sold: (1) To the big (sometimes referred to as syndicated) Independents; (2) to REA cooperative projects; (3) to the Bell System; (4) to nearby small Independents, and (5) to individuals, the company maintaining its identity, but under new ownership.

Why is the situation peculiar? It would seem that when the opportunities are good there would be less rather than more small companies up for sale. There must be reasons, and it should be valuable for small company owners to examine these reasons.

The big reason is very probably the voracious appetite of the average small company at present for money. This comparatively sudden appetite is producing a large amount of scare and worry in the present owner. He has operated along for years, getting enough money from his telephone company to live on, to make minor additions and improvements from time to time, and to keep his customers reasonably well satisfied. Now suddenly, he is faced with a situation where the cost of doing what needs to be done will cost many times the amount of dollars that shows on his annual balance sheet as the total assets of his company. He discovers that when he does one of these major remodeling and improving jobs, his old plant, by the time he gets through paying for dismanteling it, is almost worthless. He has never had to borrow any big amounts before and the thought of it scares and worries him. He doesn't know from whom to borrow, how to go about it, or even whether he can borrow. When he goes to conventions, he hears people talk about the Small Company Problem, and he gets to thinking about himself as a problem-child. When he talks to representatives from the large companies, he easily infers from their tone and conversations that they don't think much of the chances of a small company to operate profitably and furnish satisfactory service. All these things keep adding up in his mind until he is in a pretty sad state. And this is the condition in which somebody or some event finds him. That is part of the story.

The Reasons Why

THE OTHER part is not so simple, for there are different reasons why he sells to one of the 5 categories listed earlier. This list is not complete by any means, but some of the major secondary factors in his selling are included.

1. Something happens to make his a "distress case." He has a storm; a defense plant with huge requirements for telephone service moves into his area; a group of local citizens gets together and starts requesting a lot of new and improved services, etc. In these cases, the State Commission usually comes into the situation because local citizens are demanding that something be done, and the thing they most usually demand is that he sell out to the Bell System or a nearby large Independent.

2. Somebody offers him what is truly a big price for his company. This gives him a chance to salvage his investment, and make a profit besides. And compared to the value of his plant if he tears it down in order to rebuild, the offer is almost beyond refusal. In these cases, it is usually an REA co-op or an unversed individual who makes the offer to purchase the company.

3. The owner dies, and there is no one among his heirs with an inclination toward the small telephone business. In these cases, the property will be sold to almost anyone who comes along with an offer.

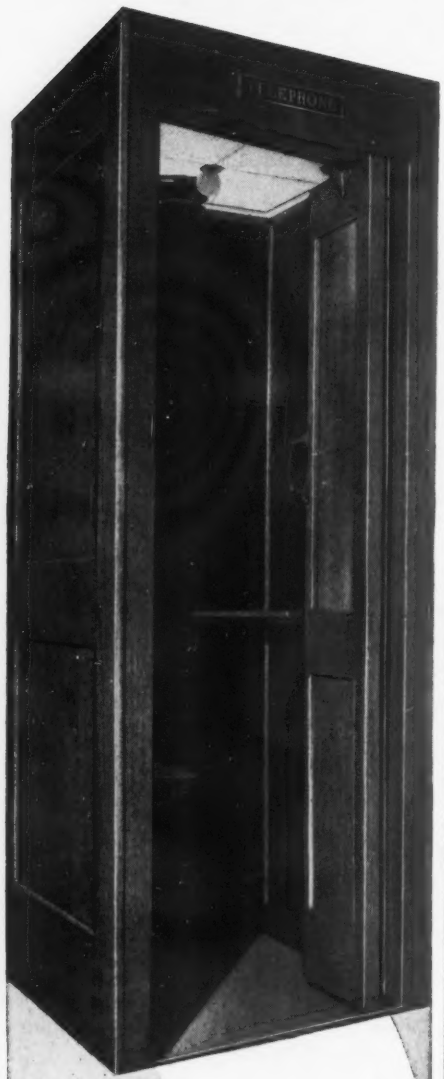
4. A nearby small Independent which has been operated reasonably well makes him an offer, which, while it may not be what he would like to have, still gives him an "out" from his mental confusion described above, and gives him reasonable assurance that his subscribers will be fairly well treated.

The Secondary Push

THERE ARE still other situations, or perhaps combinations of several, which provide the necessary secondary push to make him sell out.

Now let's turn it around and look at the other side. Everytime someone sells a telephone company, someone else has to buy it. And if the seller has reasons for selling, the buyer must also have reasons for buying. It might be profitable to examine some of these reasons briefly.

The big and basic reason is stated in Fact number 1 at the beginning of this article: the opportunities in



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the average small town for the telephone company there to grow, serve and prosper, is good—better than it has been for a long time. This is the main reason why small companies are being bought now. But there are also secondary reasons.

In some cases political and/or commission pressure is put on the Bell System or a large Independent to purchase a distress case, and in order to stand well politically or to keep in the good graces of the commission, the purchasing company is placed in a position where it is expedient to bow to the pressure whether it wants to particularly or not.

An REA co-op wants a couple (or more) of towns to carry its proposed rural development and will offer an unusually good price to get the town property.

An individual decides he wants a telephone company. In an increasing number of cases, these are plant men who have been working for another telephone company, but are either retired or decide they want to get out on their own.

A nearby small Independent discovers that it is easier to finance a larger property than it is a smaller property, and wants to expand its operations so that it can be in a better position to ask for financing.

And, of course, every successful business is an ambitious one, and it is just naturally in an American's blood to want to keep on getting bigger and better.

But back of all these secondary reasons is the basic reason that the opportunities are good. *I candidly doubt that any of the secondary reasons given would be enough, by themselves, to induce a purchase, if this basic reason were not in the background.*

We have then, a situation where there are potent reasons for many present owners selling, and equally good reasons for the prospective owners to buy, and this combination is resulting in the increasing number of sales being consumated.

This discussion, up to now, is the basis for several lines of thought, each line of which is a rather important subject all to itself.

Since the situation described above will continue to exist, we can very probably expect the sales to continue. And the first line of thought that the present small company owner will want to pursue is—in spite of the difficulties, should I sell or not?

Another line of thought is the old problem of sales to the Bell System. Independents decry each sale; committees are appointed on the subject, and yet the sales continue, and I personally can see no stopping point.

Still another line of thought concerns the REA, especially in its cooperative form, and what the development of REA co-op means and where it leads.

Another important one is an appraisal of the situation of our industry at present. Both seller and buyer need to think in broader terms than the one company they are primarily interested in if either is to make a sound decision.

There is also the matter implied in an earlier statement that when local citizens, usually stimulated by a distress or similar circumstance, band together for action, they are more than likely to demand a sale to the Bell or to a large Independent. The fact is, and I will argue (which I usually won't do) with anyone that a properly financed and managed small company can furnish at least as good and probably more satisfactory service than the Bell System or a large Independent. Why then, the demand for sale to the Bell or the large Independent? This matter probably hinges on the old saying that, "He who tooteth not his own horn, the same will not be tooted."

These then, are some of the lines of thought into which we small company folks should delve. And in an effort to cover this ground, I have written several articles covering these subjects. In due course these will appear, and I hope, will give you small stimulation to think more deeply into them as they apply to your particular situation.

For the record, they will appear in this order:

What is the Present Situation With Our Industry.

What About These Sales to the Bell System.

Let Our Horn Be Tooted.

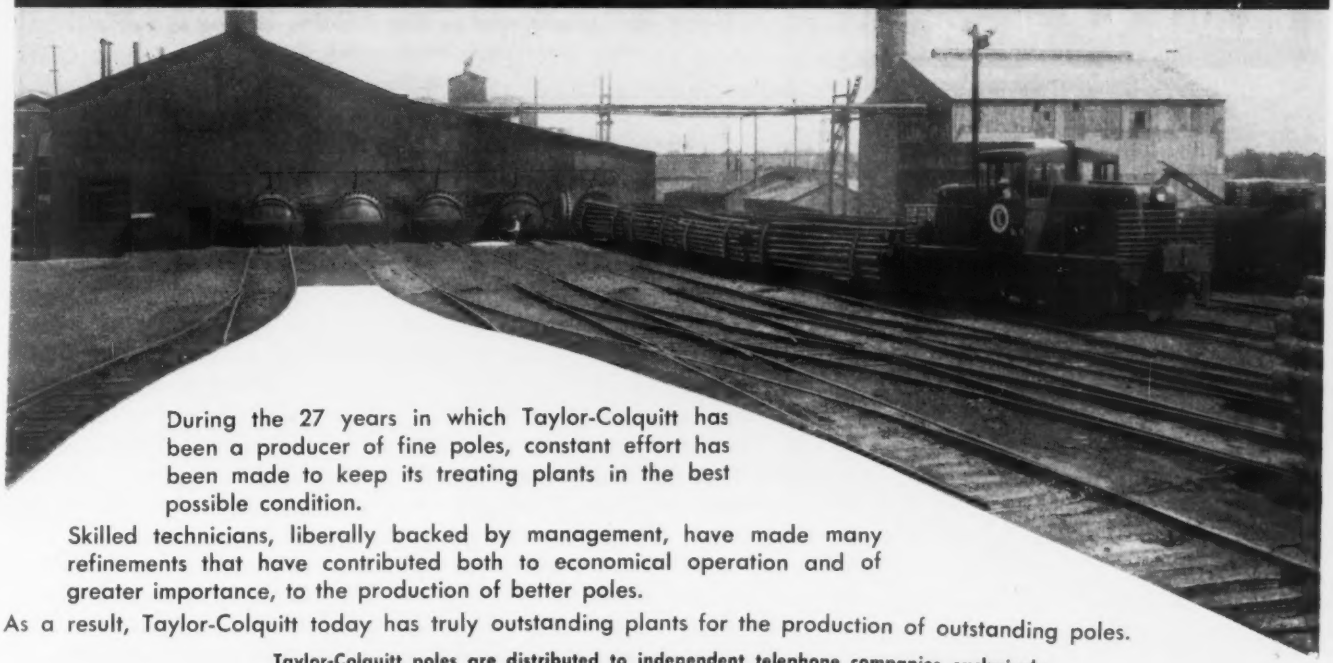
REA Co-ops In the Telephone Industry.

We Small Companies Need To Do Some Bragging.

Should You Sell Your Company.

So long for now, Neighbors—Let's get together again in the next issues.

POLES FROM TRULY OUTSTANDING PLANTS



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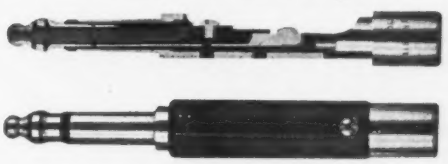

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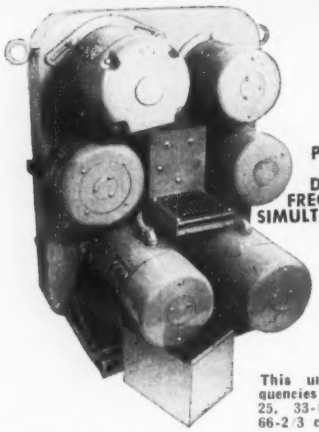

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Summary Of R E A Allocations

A monthly report of rural telephone loan allocations approved by the Rural Electrification Administration (REA).

GEORGIA: *Planters Rural Telephone Cooperative, Millen, Ga.*, $145,000, second loan to this borrower.

These loan funds will be used to cover increased construction costs involved since the first loan of $420,000 was approved in Feb., 1952.

The two REA loans will enable the borrower to provide modern telephone service to 1,197 subscribers in Screven and Effingham counties. Present plans call for six instead of five dial central offices. Contracts have already been let for the central office equipment for the offices in Screven county—Doublehead, Woodcliff, Hilltonia and Newington. The borrower is considering service without toll charge between each of these offices and Sylvania, nearby trading center and county seat. The two remaining central offices will be at Guyton and Marlowe.

The completed system will consist of 441 miles of line, and will have basic plant capacity to meet the needs of all potential subscribers in the operating area.

• • •

IOWA: *Lawton Cooperative Telephone Association, Lawton, Ia.*, $193,000, second loan to this borrower.

These loan funds will be used to finance the construction of 28 miles of line not provided for in the first loan, and an increase in the proportion of private, semi-private or 4-party lines. The funds will also cover increased construction costs involved since the first loan of $699,000 was approved in Feb., 1952.

The borrower is planning service without toll charge within the northern section of the system including the Lawton, Moville and Bronson exchange areas; and also within the southern section comprised of Hornick, Climbing Hill and Smithland areas. There will be a toll charge for calls between the two sections.

The expansion and improvement possible under both REA loans will bring modern telephone service to 1,752 rural subscribers over 474 miles of line in Woodbury and Monona counties. The completed system will have basic plant facilities to meet the needs of all potential subscribers in the operating area.

• • •

KENTUCKY: *Brandenburg Telephone Co., Brandenburg, Ky.*, $258,000, second loan to this company. (Announced April 28)

These loan funds will be used for expanded telephone facilities to serve 278 subscribers not provided for in the first loan. The Brandenburg central office will be equipped with a 3-position toll board to handle all toll calls; provision will also be made for service without toll charge among the four exchange areas of the new system.

In addition, this loan will cover increased construction costs involved since the first loan of $321,000 was approved in April 1951.

The modernization and expansion possible under both REA loans will bring modern telephone service to 1,149 subscribers in Meade and Breckenridge Counties. Dial central offices will be located at: Brandenburg, Battletown, Payneville, and North Garrett.

The completed system, consisting of 254 miles of line, will have basic plant facilities to meet the needs of all potential subscribers in the operating area.

REA rescinded $266,000 loan allocation to *Mt. Vernon Telephone Co.*, Broadhead, Ky.

• • •

MICHIGAN:—Lawrence Telephone Co., Lawrence, Mich., $112,000, second loan to this borrower.

These loan funds will be used to finance the construction of 23 miles of line and other facilities to serve 52 subscribers not provided for in the first loan of $142,000 approved in June 1951; also for a new combination central office and commercial office building at Lawrence.

The modernization and expansion afforded by both loans will furnish improved service to the 552 existing subscribers and modern service to 67 families now without telephones.

The completed system will consist of 91 miles of line in Van Buren County.

Bids have been received by the borrower for central office equipment, and the company expects construction on the outside plant to start within the next month.

• • •

MINNESOTA: *Barnesville Rural Telephone Association, Barnesville, Minn.*, $517,000, to improve and expand rural telephone service in Clay county, Minn., and Richland county, N. D.

The loan includes $142,000 previously approved for the Abercrombie Telephone Co. of Abercrombie, N. D., which is being acquired by the Barnesville Rural Telephone Association. All of the facilities planned by the Abercrombie company under the earlier loan will be constructed by the association.

Much of the new loan is, in effect, a supplement to the earlier loan. The Abercrombie company was unable to make the necessary local arrangements to start using the REA loan funds; the Association has already made most of them, and can proceed rapidly into construction. Approval of the new loan was simultaneous with rescission of the loan to Abercrombie.

With these loan funds, the Association will rehabilitate the Abercrombie properties, now serving 315 subscribers over 136 miles of line, and add new subscribers there as the company had originally planned. In addition, it will acquire the Mooreton Telephone Co., Mooreton, N.D., now providing dial service to 137 subscribers over 59 miles of line, and four common battery rural switcher lines served by the Barnesville municipal telephone system.

When construction provided for under this loan is completed, the system will have unattended dial exchanges at Barnesville, Minn., and Mooreton and Abercrombie, N. D., serving 661 subscribers of the association, of which 155 are now without telephones. Improved switching service will be provided to another 575 subscribers within the city of Barnesville and in rural areas, including 33 new subscribers not now receiving service.

The new system serving a total of 1,236 telephone users will consist of 440 miles of line of which 38 miles will remain in use, 173 miles of new line will be constructed, and the 229 miles of existing line will be rehabilitated.

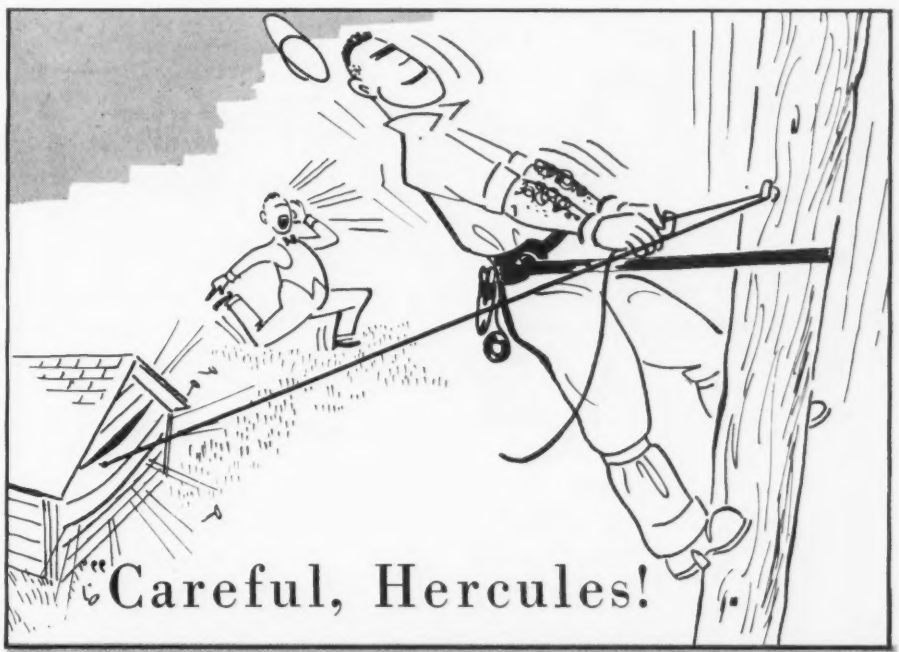
This loan also covers increased costs since the first loan for some of these facilities was approved.

MINNESOTA: *Farmers Mutual Telephone Co., (Cerro Gordo), Madison, Minn.*, $36,000, third loan to this borrower.

These loan funds will be used to complete the construction authorized in the first two loans and provide for 33 miles of line not included in these loans.

The three REA loans will finance dial telephone service to 378 subscribers in Lac qui Parle county. Construction of the central office building at Cerro Gordo is practically complete and 274 subscribers are already connected. The cutover to dial service is expected within the next few weeks.

Completed, the new system will consist of 218 miles of line, and it



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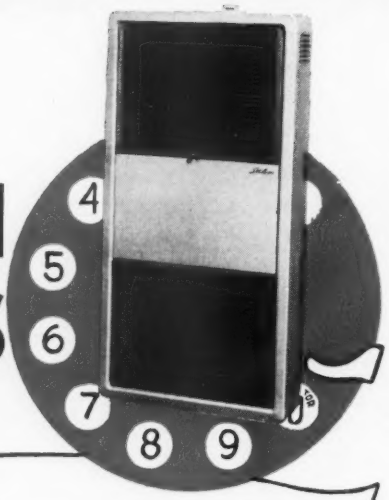

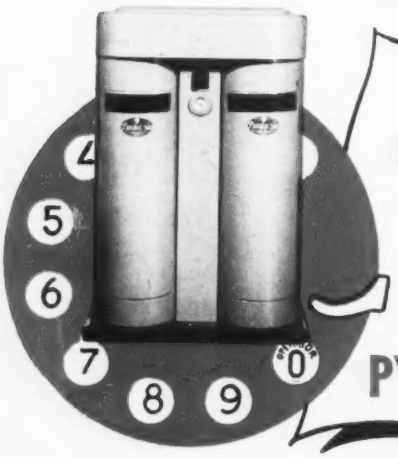

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will be equipped to handle all potential subscribers in the operating area.

• • •

MINNESOTA:—Hector Telephone Co., Hector, Minn., $175,000, second loan to this borrower.

The loan funds will be used for the construction of 66 miles of additional line and other facilities to furnish modern telephone service to 219 subscribers not provided for in the first loan. They will also cover increased construction costs involved since the original loan of $260,000 was approved in Oct. 1951.

With the two REA loans, the borrower plans to construct a new dial central office building at Cosmos, and a combination central office-headquarters building at Hector. The funds will also extend and improve the outside plant facilities of these two exchange areas as well as those of the Palmyra exchange area. This modernization and expansion will furnish new and improved telephone service to 1,250 subscribers in Renville, Meeker and Kendiyohi Counties.

Subscribers in the Hector exchange area will be able to call the Cosmos and Palmyra areas without toll charge, as well as the nearby town of Buffalo Lake. There will, however, be a charge for calls between the Cosmos and Palmyra exchange areas.

The completed system will consist of 326 miles of line.

• • •

NEVADA: *Lincoln County Telephone System, Pioche, Nev.*, $174,000 second loan to this borrower.

As a result of this new loan approval, modern telephone service will be made available to 125 subscribers not provided for in the first loan. The new loan will also cover increased construction costs since the first loan of $242,000 was allocated in September, 1951.

Four central offices will be provided at Caliente, Pioche, Panaca, and Alamo. This plan eliminates the proposed central office at Caselton since the site of a government-financed development of 100 homes has been changed from Caselton to Panaca. The Panaca exchange facilities will be enlarged to handle the increased load.

When all the improvements and expansion under both REA loans are complete, this borrower will be operating 185 miles of line.

Quiz

QUESTIONS and ANSWERS

Conducted by
JAY G. MITCHELL

QUESTION: *We have an opportunity to purchase a small telephone exchange. Such business being new to us, we need some information, please. So that we may have some fundamentals to use as a base for this transaction, please quote to us the years of LIFE EXPECTANCY of different parts viz:*

Creosote Poles and Cross Arms
Penta Poles and Crossarms
26 Pair Paper Insulated Lead Covered Cable
5 Pair Plastic Jacketed Cable
5 Pair Neoprene Jacketed Twisted Around Steel Core
12 Gauge Galvanized BB Steel Wire
#16 Neotel Copperweld Drop Wire

Please find the stamped, addressed envelope enclosed for your convenience. Thank you.

ANSWER: To the experienced telephone executive there will be no mystery as to why an answer to this question cannot be made. There is nothing that QUESTIONS AND ANSWERS can say in answer to this interesting letter other than to suggest to this correspondent that an expert be retained to make a survey of the telephone system that it is proposed to purchase as a basis of an appraisal. While the appraisal may not be essential to the conclusion of the sale negotiations it should be slanted toward establishing the proper basis for consideration by the COMMISSION in your state. In other words the future earnings of the property will be under the jurisdiction of the Commission as will the purchase of the property initially and this requires that the proper record of the transaction, covering cost, condition and purchase price must be carefully worked out. For such a record, it is our opinion, expert help will be required whether the telephone system proposed to be purchased is small or large.

Answers to the specific inquiries set out in the question can only be made after data as to the existing present age of the several items has been ascertained (it is assumed that "Life Expectancy" means remaining service life). Even under that interpretation it would be necessary to have more complete data on the items of plant mentioned such as the gauge of wire in the cable and drop wire. An appraisal of this plant based upon a survey and inventory is strongly advised because even a small telephone system involves a substantial investment in comparison with other business enterprises which are not PUBLIC UTILITIES.

QUESTION: *We have a coal company that is opening up a shop operation about six miles out in the country. They are planning to build a telephone line to their office using the new type army field wire. This company asked me if it would work O.K. I told them that they would have too much transmission loss to be satisfactory. What is your opinion? This line will be only temporary, perhaps for a year or two. Please send your answer direct as soon as you can.*

ANSWER: If this telephone company is to be responsible for the transmission over this line it is our opinion that the telephone company should build the line. This is, of course, emphatically true if the coal company intends to have its telephone line connected in to the existing telephone office. Ownership of rural telephone lines by the subscribers for the service is never a satisfactory arrangement. It is presumed that your tariff which is on file with the COMMISSION in your state has a rate provided for individual service beyond the normal rate base area and if it does not have such a rate listed steps should be taken to secure the approval

(Please turn page)

In this issue Mr. Mitchell discusses — (A) Recommended Basis of Purchase of Telephone System, (B) Transmission and Ownership of Private Telephone Circuit, (C) Locating Cable Trouble (Undefined) and (D) Protector Airgaps.

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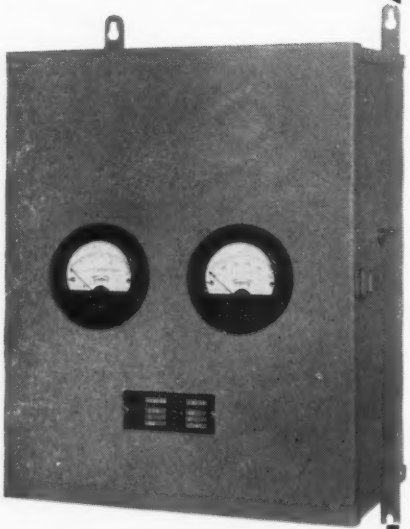

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of the COMMISSION to such a rate now.

If the circuit that is proposed to be built is for *private line service* without any exchange connection it is still our opinion that the telephone company, having the wire, the poles, the telephones and the other materials required and the *experience in telephone constrtuction* should build the line and rent it to the coal company. This should be a private line rate however and should be covered by the telephone company's tariff on file with the COMMISSION.

As to the transmission loss on the new army field wire there is no cause to worry if the wire is in good condition (insulated wire may cause trouble if it is in twisted pair and is not in good condition) although your letter does not identify the type of wire clearly that it is proposed to use for this circuit. Our final advice is this. If you are to assume the responsibility for the service over the proposed circuit then build it under contract with the coal company or build it as a part of your plant and charge an adequate rate for the service, making sure that your filed tariff is revised to cover the arrangement made.

QUESTION: *Sometime ago in the TELEPHONE ENGINEER you had an article on locating trouble in cable with battery and receiver as follows.*

Accompanying this question was a sketch showing a receiver in series with a battery and the two conductors of a cable pair or, possibly, two wires of different pairs in the cable. The sketch does not indicate which arrangement is being shown.

The inquiry continues as follows: "Trouble was found by batting cable while another person listened. Distortion was heard in receiver when batted at defective point." Please give battery voltage and was a condenser used. Enclosed is stamped and directed envelope for your reply. Thanks.

ANSWER: The method of locating cable trouble to which this letter refers is not one that is understood and it is suggested that this correspondent look through his file of past issues and write in again giving the date of the issue in which the method to which reference is made appeared and the name of the author. With these data at hand it will be possible to render an intelligent reply to the question.

There are many kinds of cable trouble and some may be accurately located by the conventional methods and some present some conditions that make exact location very difficult. Volumes could be written on methods of locating cable trouble and many excellent books on the subject are available but there is no method that is as simple as the one which forms the basis for this question.

It is the desire of TELEPHONE ENGINEER to be helpful however and for that reason QUESTIONS AND ANSWERS suggest that this correspondent, who is obviously facing some cable trouble in his telephone plant, write in again and describe the conditions as completely and accurately as possible. It is quite likely that, on that basis, some assistance can be given. At any rate an effort will be made to help solve the problem.

This is a very important matter to any telephone company and as a further suggestion we recommend that this company employ an experienced cable man or arrange with a nearby large telephone company to clear the trouble if they do not feel qualified to undertake the job alone. Such an arrangement will present an opportunity for the management to observe and learn the rudiments of cable work while their own trouble is being cleared.

QUESTION: We find that the column *entitled QUESTIONS AND ANSWERS, because it emphasizes the importance of principles of operation of the many types of equipment that enter into even the smallest telephone systems, is very profitable and interesting to the rank and file. In the May Issue of FORTNIGHTLY TELEPHONE ENGINEER the brief discussion of protection airgaps is interesting and we agree that in this field of telephone plant operation experience is the best guide. Our experience has led us to prefer the type of protector that relies upon an airgap that is short but that has a comparatively large area rather than on the type that includes any form of sawtooth.*

It has been our experience that the effectiveness of the sawtooth type of air gap soon becomes very much less

than it was when first installed. On examination of some of this type that we have had to replace we find that the sharp tips of the sawteeth have been apparently melted or fused into little metallic balls at the end of the tooth. In our crude way we figured that this effect not only increased the distance between the tip of the tooth and the ground element of the protector but that it also reduced the effectiveness of the original sharp point of the tooth in the promotion, if any, of an electric discharge to ground from the line wire. We are now using a type of protector which has an extremely short airgap of comparatively large effective area opposed to the ground terminal and we are having much better results. It is only fair to say, however, that we agree with the most of the article referred to especially in the recommendation that continued trouble with lightning or other foreign currents on the line wire will be reduced by the installation of protectors at shorter intervals.

IF YOU'D like Jay G. Mitchell's technical and helpful opinion on some question, a postcard will bring you a reply in these columns.

ANSWERS: This comment, it is not in any sense a question, should be most carefully read. In making a study of the subject when the original trouble continued instead of being reduced this correspondent has been, in our opinion, very wise. In some territories there will be a greater volume of foreign potentials on telephone line wires than in others. For that reason it is our advice that you consult the manufacturer from whom your protective equipment comes as to the type and quantities that are recommended for your particular location.

In making this inquiry of your manufacturer or jobber it will be helpful, of course if you supply with your letter a diagram of your leads, as to location and direction, with a rough statement of the relative amounts of open wire and aerial cable. From his records it will be possible for constructive suggestions for your guidance to be made up. Finally it would be appreciated if you could supply these data, in rough form, for use in QUESTIONS AND ANSWERS.

TELEPHONE ENGINEER & MANAGEMENT'S

HANDBOOK DATA SHEETS

Prepared By
JOHN S. REED

TABLE VI

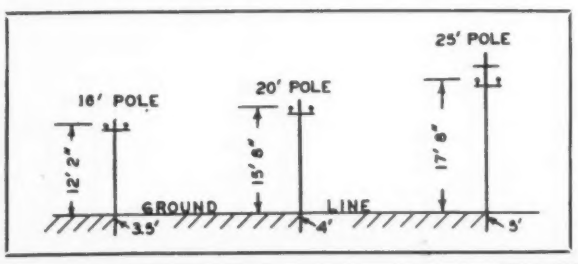
Staking Table for Medium and Light Loading Districts using .080 Inch High-Strength 40% Conductivity Copperweld Communication Wire Sagged in Accordance with Table II.

	Ridge Height or Depth of Depression (in Ft.) at center of Span for Pole Lengths and Basic Clearances (in Ft)							Span Length in Ft. for NESC Ground Clearance	Maximum Tension in Percent of Rated Strength
	16 - 8	16 - 10	20 - 8	20 - 10	20 - 14	25 - 10	25 - 14		
Medium Loading District	2.5*	0.5*	6.0*	4.0*	0	6.0*	2.0*	270	
	2.3*	0.3*	5.8*	3.8*	0.2**	5.8*	1.8*	280	60
	2.0*	0	5.5*	3.5*	0.5**	5.5*	1.5*	293	
	1.5*	0.5**	5.0*	3.0*	1.0**	5.0*	1.0*	315	
	1.0*	1.0**	4.5*	2.5*	1.5**	4.5*	0.5*	336	
	0.5*	1.5**	4.0*	2.0*	2.0**	4.0*	0	356	
	0.3*	1.7**	3.8*	1.8*	2.2**	3.8*	0.2**	368	70
	0	2.0**	3.5*	1.5*	2.5**	3.5*	0.5**	376	
	0.5**	2.5**	3.0*	1.0*	3.0**	3.0*	1.0**	395	
	1.0**	3.0**	2.5*	0.5*	3.5**	2.5*	1.5**	414	75
Light Loading District	2.5*	0.5*	6.0*	4.0*	0	6.0*	2.0*	287	29
	2.0*	0	5.5*	3.5*	0.5**	1.5*	1.5*	324	
	1.5*	0.5**	5.0*	3.0*	1.0**	5.5*	1.0*	352	
	1.0*	1.0**	4.5*	2.5*	1.5**	4.5*	0.5*	377	
	0.5*	1.5**	4.0*	2.0*	2.0**	4.0*	0	397	
	0	2.0**	3.5*	1.5*	2.5**	3.5*	0.5**	417	
	0.5**	2.5**	3.0*	1.0*	3.0**	3.0*	1.0**	434	
	1.0**	3.0**	2.5*	0.5*	3.5**	2.5*	1.5**	450	36

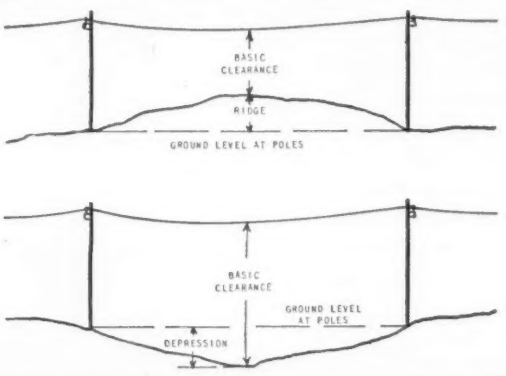
For example, when pole length is 16 ft. and basic clearance is 8 feet, the column heading is "16 - 8."
* Ridge height ABOVE level in feet. "O" means ground at center of span is level with ground line at poles.
** Depth of depression at center of span BELOW ground line at poles.

CLEARANCE DETERMINATION

The figures in TABLES V and VI are intended for the types of conductor supports, and the pole framings and settings shown in the first illustration. Where pole brackets are employed, the clearances will be 12 or 18 inches less than indicated, depending on whether a 12- or 18-inch spacing between the upper and lower wires is employed. In this case, clearance is determined between lower wire and ground.



The second illustration demonstrates how the rise or depression with respect to the ground level is determined. If possible, locate poles on rises in ground as this enables shortest practicable poles lengths and smallest number of poles to be used.



USITA Executive Conference Report

(Continued from page 44)

also give consideration to certain other basic objectives: First, it should provide adequate compensation for all participating parties so as to encourage efficient operation and maintain a healthy industry; second, it should be directed toward the ultimate elimination of dividend responsibility for both toll and exchange services within Independent company areas; and third, such action should promote normal development of these services rather than curtail their development or force possible sale, which is the end result of inadequate compensation."

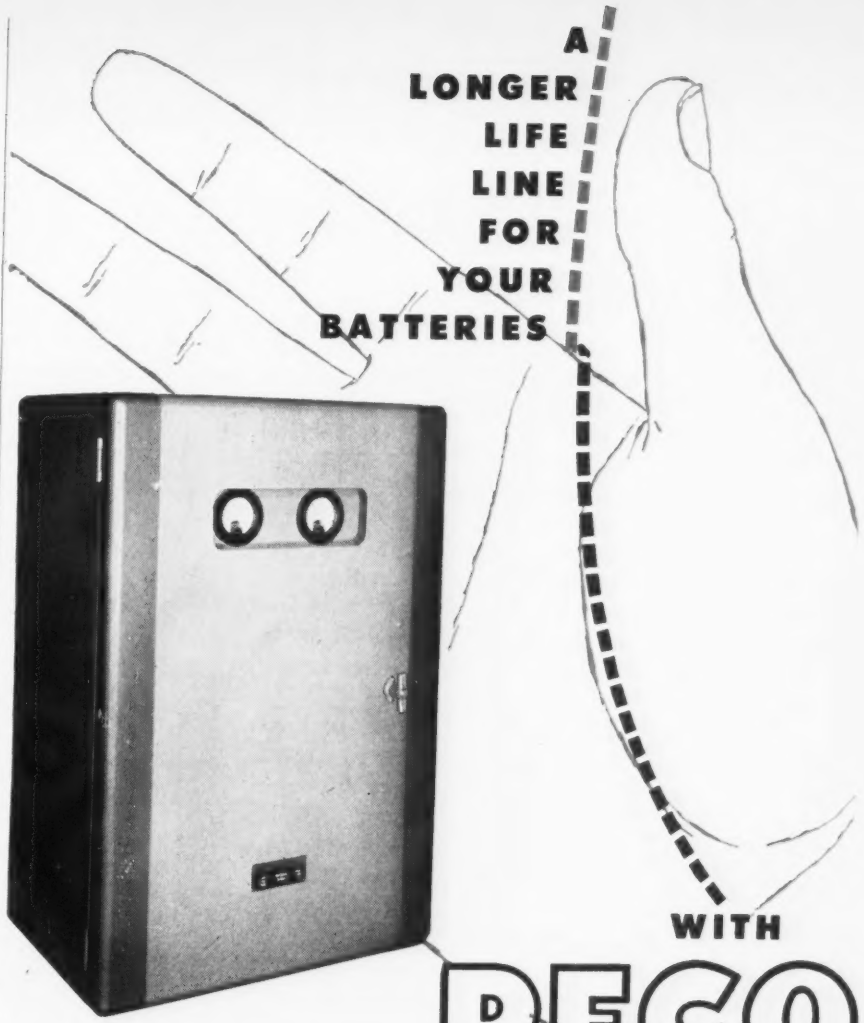
Mr. Jarmon pointed out that the matter of toll compensation is of increasing importance to the telephone industry. In 1953 the Independents' share of revenue from interchanged traffic with the Bell System was less than $12,000,000. By 1952 this had grown to $95,000,000, and it is estimated that such revenue for 1953 will exceed $113,000,000.

"Toll service," he said, "is the most rapidly-growing segment of the Independents' over-all business. It has become an integrated part of the commercial and social activities of the nation and, with further growth in population and movement of industry to areas served by the Independents, it is bound to become increasingly important. Contrary to the extreme fluctuations in volume experienced in earlier periods of development of the service, it is now a more stable part of our operations, but not yet as stable as exchange service. Throughout the nation the Independents have some 11,000 exchanges, serving about two-thirds of the geographical area through approximately 8,700,000 telephones, all of which are potential points for the origination and termination of toll calls."

Mr. Jarmon stated that the Toll Compensation Committee realizes its job is not completed even though a substantial increase in revenue has been obtained.

"It is essential," he said, "to all Independents that compensation poli-

(Please turn to page 89)



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HANDBOOK DATA SHEETS

Prepared By
JOHN S. REED

For guying purposes, the wire load at turns or angles and dead end points in the open wire lead should be known. TABLES VII, VIII, and IX list the wire load for each pair of wires in the loading districts.

The line angle is the number of degrees deviation from the direction of the lead at the angle or corner pole. The "pull" in feet is a measure of this angle. It is obtained by measuring off 100 feet on each side of the angle pole along the two directions of the lead, connecting these points by a straight line with another line perpendicular to it and halfway between these points. This perpendicular line terminates at the corner pole and is the "pull" in feet. The Dillon bisector is a very convenient tool for obtaining the line angle or "pull" in feet without the need for measuring off on each side of the lead and attempting to locate the perpendicular line.

The total horizontal pull is the wire load in pounds per pair of wires. For more than two wires, the load per pair of wires is multiplied by the number of wire pairs.

TABLE VII
Total Horizontal Pull at Angle Pole for .080 Inch High-Strength, 40% Conductivity Copperweld Communication Wire—Heavy Loading District

Line Angle in Degrees	Pull in Ft.	Total Pull — Lbs per Pair of Wires Average of Adjacent Spans — Ft. 150	200	250
		Total Pull — Lbs. per Pair of Wires		
5	4.4	190	240	290
10	8.7	280	340	410
15	13.1	360	440	520
20	17.4	440	540	630
25	21.6	520	630	740
30	25.9	610	730	850
35	30.0	690	820	960
40	34.2	760	920	1060
45	38.3	840	1010	1170
50	42.3	990	1180	1370
60	5.0	1060	1270	1460
		Total Pull at Dead-Ends Pounds per Pair of Wires		
		960	1140	1310

TABLE VIII
Total Horizontal Pull in Pounds at Angle Pole for .080 Inch High-Strength, 40% Conductivity Copperweld Communication Wire — Medium Loading District

Line Angle in Degrees	Pull in Ft.	Average of Adjacent Spans — Ft. 150	200	250	300	350	400
5	4.4	120	140	170	200	230	250
10	8.7	170	210	250	280	320	350
15	13.1	230	280	310	370	410	450
20	17.4	290	340	390	540	490	550
25	21.6	340	410	470	530	580	640
30	25.9	400	470	540	610	670	740
35	30.0	450	540	610	690	750	830
40	34.2	510	600	680	770	840	930
45	38.3	560	660	750	840	920	1020
50	42.3	610	720	810	920	1000	1100
55	46.2	660	780	880	990	1080	1190
60	50	710	830	940	1060	1160	1270
		Total Pull at Dead-Ends—Pounds Per Pair of Wires					
			660	770	870	1060	1140

TABLE IX
Total Horizontal Pull at Angle Pole for .080 Inch High-Strength, 40% Conductivity Copperweld Communication Wire—Light Loading District

Line Angle in Degrees	Pull in Ft.	Average of Adjacent Spans — Ft. 150	200	250	300	350	400	450	500	550
5	4.4	50	60	70	80	80	90	100	110	120
10	8.7	80	90	100	120	130	140	150	160	170
15	13.1	100	120	130	150	160	180	200	210	230
20	17.4	140	160	170	190	210	230	250	260	280
25	21.6	170	190	210	230	250	270	290	310	330
30	25.9	200	220	240	270	290	310	330	360	380
35	30.0	230	260	280	310	330	360	380	400	420
40	34.2	260	290	320	350	380	400	420	450	480
45	38.3	290	320	350	380	410	440	470	490	520
50	42.3	310	350	380	420	450	480	510	540	570
55	46.2	340	380	420	450	490	520	550	580	610
60	50	370	410	450	490	530	560	590	630	660
		Total Pull at Dead-Ends—Pounds per pair of Wires								
		350	390	420	460	490	520	540	570	600

(Continued from page 87)

cies and practices keep pace with the rapidly changing economic and operating conditions. Accordingly, settlement arrangements and the level of compensation payments to the Independents for traffic interchanged with the Bell System should, of necessity, receive the attention of the Committee on a continuing basis. Settlement practices for tele-typewriter exchange service, and extended area, private line and foreign exchange services, also require study to arrive at settlement arrangements which will fully reimburse Independent companies for thir costs. The prorate weighting factors developed in the recent negotiations are presently being studied to see if more equitable procedures in compensating for line haul can be devised. In addition, the USITA Traffic Agreement suggested for use in connection with toll settlements between Independent companies is being reviewed to ascertain what changes, if any, should be made at this time."

Mr. Jarmon said another essential part of future activities of the Committee will be the development of more equitable and simplified separations procedures.

"Experience and results obtained from the recent studies provide an excellent foundation for improvement and simplification of the USITA cost study procedures and instructions," he said. "Also, it is generally recognized that there is need for further consideration of the fundamentals underlying the basic procedures set forth in the 1947 Separations Manual as amended in 1952."

"For example, the so-called 'Charleston Plan' of allocating more plant and expenses to interstate toll operations was a compromise measure to meet, at least in part, certain conditions between state and interstate operations of the Bell System. Were all Independent companies to apply the principles of the 'Charleston Plan' to their state inter-changed toll business, as well as to interstate toll, the results could very well still understate the actual costs incurred by Independent companies in handling inter-changed traffic. Certainly, in the interest of simplification and logic alone, a single method should be applicable to both state and interstate interchanged business. It ap-

(Please turn to page 90)

1500 pounds

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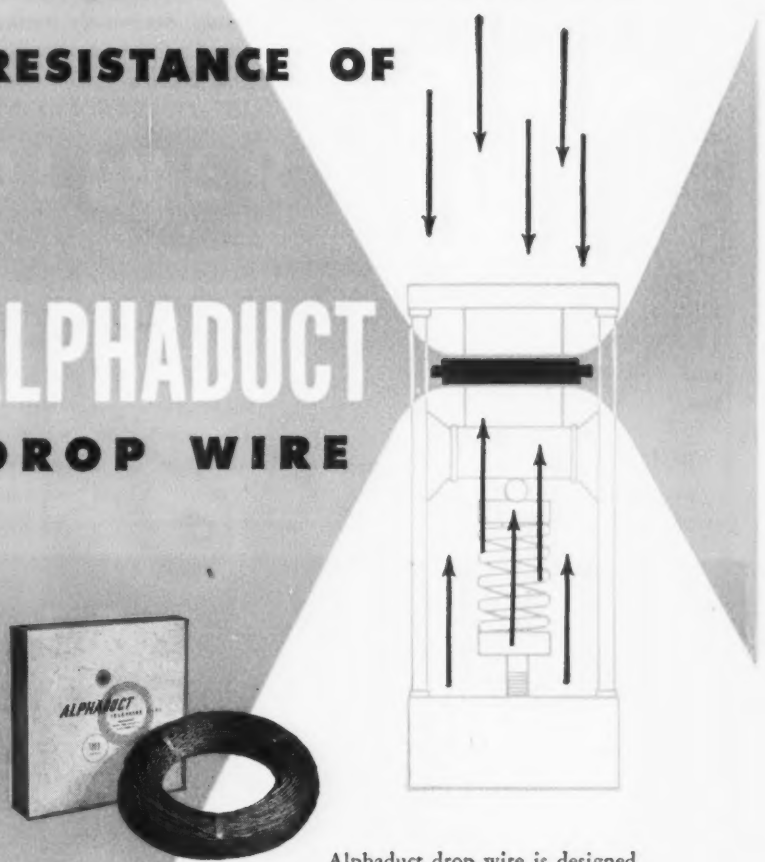

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(Continued from page 89)

pears, therefore, that a more realistic approach to the problem of cost allocations is needed which will not only be more fair and equitable to the Independent branch of the industry, but will also tend to minimize the present disparity between state and interstate toll rate structures.

"These and other problems that arise from time to time will occupy the attention of the members of your Toll Compensation Committee in the immediate future. I assure you that we shall pursue them until some satisfactory solutions for each problem has been reached. The continued support of all of you in connection with the problems that lie ahead is paramount, and your full cooperation and assistance are solicited by the Committee . . ."

Following floor discussion of the subject at the May 25 session the USITA Board of Directors prepared and approved the following resolution:

RESOLUTION

WHEREAS, The Toll Compensation and Settlements Committee on February 18-20, 1953, conducted negotiations with the A.T.&T. Company that would result in a proposed minimum increase of approximately 18 million dollars per year to the Independent companies as a whole,

WHEREAS, Information received within the past few days indicates that contrary to the understanding reached during the negotiations certain Bell Associated companies propose to offer contracts which would materially reduce the proposed minimum increase of 18 million dollars,

BE IT RESOLVED, That the Board of Directors request the A.T.&T. Company to insist that the Associated Bell companies offer contracts fully covering all the understandings reached during the foregoing negotiations between the Toll Compensation and Settlements Committee and the A.T.&T. representatives.

The resolution, when read to the Conference on May 26 by USITA Executive Vice-President Clyde S. Bailey, was approved by the Conference delegates.

Panel Discussion

AT THE AFTERNOON SESSION on May 25 the Independent operating executives participated in a panel discussion which featured addresses by Carl Brorein, president of the Peninsular Telephone Co., Tampa, Fla.; J. F. Havens, vice-president of the Carolina Telephone & Telegraph Co., Tarboro, N. C., and Wm. C. Henry, president of the Northern Ohio Telephone Co., Bellevue, Ohio.

Mr. Brorein opened the discussion by pointing out that all companies should keep pace with the public's demand for service.

"It is essential," he said, "to maintain complete records — records that will reflect the company's actual operating results if you hope to obtain the money required to expand and improve your property."

Discussing small company financing, Mr. Brorein stated there are several ways a company can obtain money for the expansion of facilities.

"The smaller companies," he said,

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"can get their money by putting profits back into the business, by customer investment, by short term loans, and by obtaining the assistance of Independent manufacturers in financing their expansion improvement projects."

He recommended that any company that was "up against it for funds" consider REA financing and warned that no company should get itself into a position of excessive debt. The ideal debt structure, he said, is 35 percent bonds, 15 percent preferred stock, and 50 percent common stock.

Referring to the "rate lag" or delays in granting rate relief, Mr. Brorein stated that the delays are inherent and there is no way to get away from them. He stated that commissions must have time to review facts and make decisions and that they must operate for the common good of the citizens and the company. He suggested that companies could aid their own rate increase applications by: (1) Cultivating the good will of the public; (2) preparing application and exhibits to reflect the exact need for increased rates.

"You can," Mr. Brorein said, "foresee your rate requirements and notify your commission of your situation. This advance information will enable the commission to take steps to give you the assistance you require . . ."

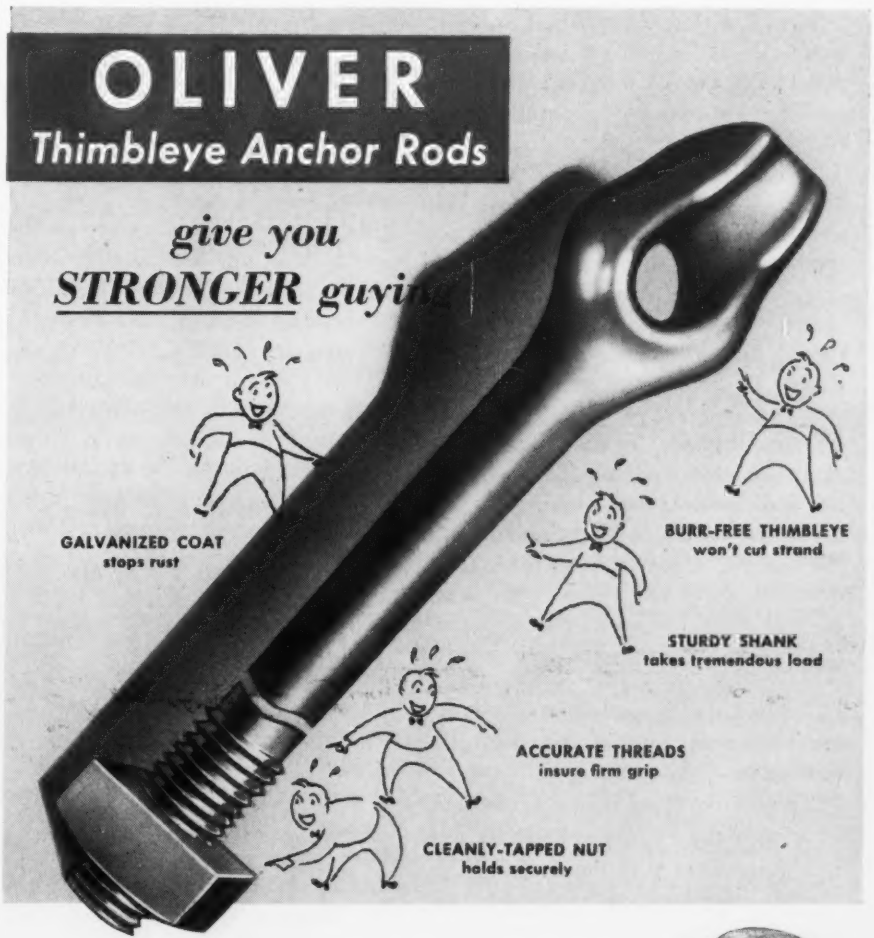
Mr. Havens told the conference that many regulatory bodies are now using the expression "the point of diminishing returns."

"It can be proven," he said, "without too much difficulty that our revenues have not increased to the same degree that the cost-of-living has increased. But we must remember that our increases so far as the public is concerned are over and above the other cost-of-living increases and that being a regulated utility the customers have the privilege of protesting an increase in utility rates. They can and do intervene in rate proceedings and exert every pressure, including political, to eliminate any increase in earnings being granted to utility companies. While telephone companies must make every effort to provide adequate service at the lowest possible rates they can not afford to delay making applications with the regulatory bodies, and in sufficient amounts, to assure the earnings necessary to pay living wages to their employees, and a reasonable return to their stockholders on their investment."

Discussing people, Mr. Havens said, "People are our customers and our potential customers. They are our employees, present and future. They are our stockholders, existing and prospective."

"To our customers," he stated, "we are obligated to provide adequate communication facilities. To our potential customers we are obligated to provide them with service. In the six rate cases which the Carolina Telephone & Telegraph Co. has had since 1947 we have never received a protest or a petition to intervene in a rate proceeding from a potential customer except to secure service. We have received many protests from existing customers who have no concern for the establishment of additional service to the prospective customers unless some of those prospective customers are their friends.

"The protesting existing sub-



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(Continued from page 91)

scribers do not understand and sometimes apparently do not wish to understand that they who have telephone service should have to pay additional rates because other people require service and that the company has made tremendous investments to provide more and better service. The existing customers are not concerned with the explanation made by the telephone company that their service is more valuable because of the additional subscribers they have access to brought about by the expansion program."

Mr. Havens explained that opposition to the rate increases has stemmed principally from Chambers of Commerce in the company's operating territory.

"To offset this opposition," he said, "we undertook with some degree of success to tell the company's story to the businessmen of our area who generally comprise Chambers of Commerce. To these people we explained the job that the company had accomplished; the salary and wage increases to company employees; the additional investment made in telephone property; the ways and means of securing the additional capital required to increase the telephone plant investment. We also explained to them the inadequate earnings of the past; the acts of regulatory bodies in reducing the minimum requirements requested; the increases in taxes paid in their individual communities; and many other aspects not known by our customers.

"We also utilized with a great deal of success the employee body by acquainting them with the needs of the company for additional earnings and they became our agents in discussing with the public the company's position and need."

Emphasizing that telephones, rates and people could probably be better stated in two words — "public relations," Mr. Havens stated — "We must (and in our company we are) expand our public relations to tell to the telephone-using public by every means possible the story of our business. We must be super-salesmen in the selling of our business to the general public both from the point of eliminating opposition to necessary rate increases and the securing of additional capital that is needed to meet the continued demand for additional telephone service."

He warned that in 1953 and in 1954 there will be failures in the Independent telephone industry.

"There will be failures," he said, "because of inability to secure the necessary capital to carry on. There will be failures because of the lack of good management; and included in those failures will be some which can be attributed primarily to the lack of good or any public relations. In a free enterprise system there can be expected some business failures but we can eliminate many of those failures by expanding our public relations programs and selling our business to the American people. To do this job we must enlist our Boards of Directors, our employees, our stockholders, and our friends if we are to succeed."

Mr. Henry told the conference that anyone visiting Washington today would notice that changes have been made since the new administration took over on Jan. 20.

"The changes are quickly apparent to anyone who knew Washington prior to Jan. 20," he said. "New heads are operating the various government departments and these new people are eager to cooperate with and help the American businessman."

Referring to the new REA administrator Ancher Nelsen, Mr. Henry stated that Mr. Nelsen is friendly, honest and practical and described him as a true descendant of the soil, a believer in free enterprise. He stated Mr. Nelsen had expressed his interest and concern over the security of rural telephone loans and possible losses in case economic conditions decline, and expressed the hope that USITA would aid REA in developing programs and routines that would make its loans economically feasible.

Commenting on loan applications, Mr. Henry stated that rural telephone loan applications should be a matter of public record and urged that REA adopt a policy of posting the names of all applicants for telephone loans as they are received.

He pointed out that more than 300 Independent telephone companies had been absorbed by REA cooperatives and warned that "the new administration has granted free enterprise a new lease on life."

"The telephone industry must not

(Please turn to page 94)

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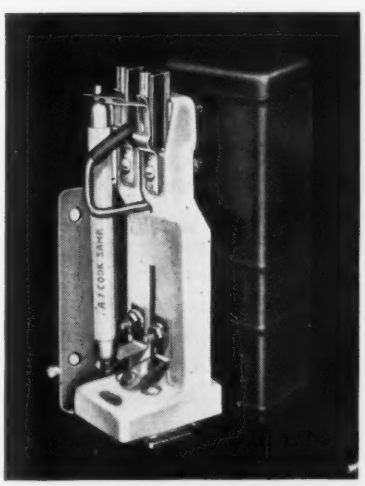

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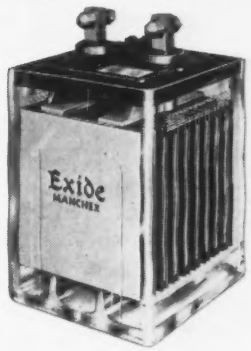

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(Continued from page 92)

fail the present administration," he said, "It must prove that private industry can do the telephone job in this country . . ."

The final speaker at the Monday afternoon session was Paul H. Good, manager, education department, Chamber of Commerce of the United States, Washington, D. C.

Ancher Nelsen Visits Conference

WILLIAM C. HENRY opened the final conference session on May 26 with a stirring tribute to the Eisenhower administration and the type of men being appointed to government offices. He then introduced a surprise visitor — Ancher Nelsen, the new REA administrator.

Mr. Nelsen told the conference group that the "big job ahead can be done if we look at the problems from all angles and work together to find workable solutions."

"I know," he said, "President Eisenhower has asked me to do a job and I am going to do my best. I am proud to be part of the president's team."

Explaining that it is hard to obtain people who know the telephone business, Mr. Nelsen said, " I plan to call on you for assistance."

"I want to make this a partnership proposition," he stated. "Any Independent that comes in and wants help from us is going to get it."

Emphasizing that the present administration is "carefully weighing everything we do," Mr. Nelsen said, "I believe in our position our big job is our country."

"We can," he said, "bring telephone service to rural areas if we cooperate and work together . . ."

Utility Management

JACKSON MARTINDELL, president of the American Institute of Management, New York City, explained to the conference group that management audits provide an opportunity to detect, consider and correct things that would not "come to your attention through other means."

"Now we are studying small companies," he said. "We have discovered that in no enterprise, studied by us, have problems been so vast as those presented by the Independent telephone industry. The problems that beset you are not small. Your industry has two segments — Bell and Independent. The Bell has established high service standards. This causes the public to want better service from its telephone companies."

Mr. Martindell stated that three factors were causing trouble for Independent telephone companies: Managements have not secured (1) additional equipment (2) additional financing and (3) adequate rates.

"In solving the industry's problems," he said, "the Independents have great advantages. Your manufacturers and suppliers are willing to sell on time payment. Banking houses are eager to help. Your commissions can be influenced to give you better rates . . . You must bring all factors together . . ."

Mr. Martindell pointed out that the Independent telephone industry is at a disadvantage because the public does not know how many Independent companies serve the U.S.A.

"When people have no conception of the size of your industry," he said, "how can they have a conception of your problems? You must make a substantial appropriation for public relations . . ."

Mr. Martindell warned that the Independent telephone industry must "get its story across to the people."

"You can't expect people to help solve your problems if they don't know about you and your problems," he concluded.

The final conference speaker, Henry J. Taylor, author, journalist and economist of New York City, presented an inspiring address on the subject "Looking Ahead At Home and Abroad."

Mr. Taylor stated that the Communist dream of a Socialized America received a setback last Nov.

"Until then," he said, "we were going down the Socialistic road through the backdoor."

Mr. Taylor emphasized that if "we can neutralize the fear of war, there are great things ahead for all people . . ."

Commenting on the fact that some people think this country's prosperity depends on war, Mr. Taylor said — "We need weapons to keep our country safe but we do not need them to keep our country prosperous."

In his concluding remarks he emphasized to the conference group that "this nation will be saved by the work of men and women in the communities of our country."

"Let the judgment of the individual American businessman enter into decisions," he said, "and this country will win out . . ."

Following Mr. Taylor's address, USITA President Blakeslee adjourned the 1953 Executives' Conference — a conference that had established a new high in cooperative effort for the good of the industry. — THE END

Robert Buzzard Elected Vice Pres. of Gen. Tel. of Pa.

Robert D. Buzzard was elected vice president and comptroller of General Telephone Co. of Pennsylvania at the board of directors organization meeting following the annual shareholders meeting held in Erie, Pennsylvania on March 25. Mr. Buzzard succeeds C. E. Jones, who retired in July 1952 under the company's regular retirement program. Formerly Mr. Buzzard was general auditor of General Telephone Co. of Pennsylvania.

Directors re-elected were A. W. Hayes, C. E. Jones, Frank B. Quinn, Edward Selden, Lewis F. Shepherd and J. C. Spencer, all of Erie, Pennsylvania.

Now We Carry

U. S. ROYAL TIRES

Taking on a dealership for this famous line is in accordance with our policy of striving to create a complete, dependable and fast-moving service of supply.

Partial List of Other Lines

- Wilkinson Line Locators
- Mall Chain Saws
- Klein Tools
- Just-Rite Flashlights
- Eveready Batteries
- Columbia Gray Label Dry Cells
- Miller Hydraulic Platform Trucks
- Butane Type Splicer's Furnaces
- Copperweld and Galvanized Steel Strand
- Poles and Crossarms
- J-M Transite
- Pole Line Hardware
- All Tools for Outside Construction
- Alphaduct Dated Insulated Wire
- New Aluminum-Coated Steel Telephone Wire
- Complete Line of Cable Spinning Equipment, Accessories, Tools and Materials.

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TELEPHONE & POWER SUPPLY, INC.
TOPEKA, KANSAS PHONE 4-2622

SUPPLIER'S NEWS BRIEFS

Kellogg To Open New Warehouse

F. M. PARSONS, vice president and sales manager, Kellogg Switchboard & Supply Co., Chicago, Ill., has announced a new branch warehouse to be opened in the near future at Mansfield, Ohio. Ground has been broken for construction of this modern one-story building which is to be equipped with a complete line of Kellog apparatus and line supplies.

The new building will be located directly on route U. S. 30N, one mile west of the Mansfield city limits. The address will be 1555 West Fourth st., Mansfield, Ohio.

This is in line with Kellogg's policy to supply customers with warehouse facilities from coast to coast.

W. N. Matthews Corp. Sold to A. B. Chance Co.

PURCHASE OF the W. N. Matthews Corp., St. Lewis, Mo. by A. B. Chance Co., Centralia, Mo., was completed May 1 according to announcement by F. Gano Chance, president of the Centralia firm.

The Matthews organization will be known as the W. N. Matthews division of the A. B. Chance Co. Claude L. Matthews, formerly president of W. N. Matthews Corp., has been named a vice-president of the Chance company.

Leeds & Northrup Announce Formation of New Firm

THE FORMATION of Integra-Leeds & Northrup Ltd., Birmingham, England, has been announced by Charles S. Redding, president of Leeds & Northrup Co., Philadelphia, and Maurice Bouffart, managing director of S. A. Integra, Liege, Belgium.

The new firm succeeds to the business formerly conducted in Birmingham under the name of The Integra Co., Ltd., which was a branch of the Liege firm and for some years has been the English agent for L&N products. That business will be expanded to include the manufacture of the products of both Leeds & Northrup Co. and S. A. Integra. Ownership of Integra-Leeds & Northrup Ltd. is shared by Leeds & Northrup Co. and the owners of the former Integra Co., Ltd. Managing director will be Jean Rogister, heretofore manager of the Birmingham firm. Mr. Redding will be a member of the new company's board of directors.

FRANK E. MONAGHAN, Stromberg-Carlson sales engineer, has been transferred to the company's Chicago office. Continuing in the capacity of sales engineer, Mr. Monaghan will serve the telephone customers of the Chicago branch and report to W. J. Pfaender. Mr. Monaghan has been located in the Rochester office, National Sales Engineering Department.

"Creation of the English company," say its spokesmen, "will strengthen the long-standing and cordial relationships of S. A. Integra and Leeds & Northrup. S. A. Integra will act as agents for both the American firm's and the new English firm's products in Belgium."

"Formation of this enterprise," says Mr. Redding, "reflects the growth in world demand for electrical measuring instruments, automatic controls and heat-treating furnaces such as our company manufactures. L&N products have long been made under license by the well-known firm of MECI (S. A. Materiel Electrique de Control et Industriel) of Paris. The Integra Co., Ltd. has been assembling a limited number of instruments largely from Philadelphia-made parts. Now that the new English firm begins actual manufacture in Birmingham, it means that world customers may choose between England, France and the United States as their source of supply.

Philco Names Allemang V.P. in Charge of Planning

HERBERT J. ALLEMANG, widely known as a management consultant who joined Philco as a corporate officer in 1951, has been appointed vice-president in charge of planning for Philco Corporation.

In his new capacity, Mr. Allemang will be responsible for the long-range planning of manufacturing facilities, organization and operations of Philco.

For the 13 years prior to joining Philco, Mr. Allemang was a senior partner of Stevenson, Jordan & Harrison, Inc., management consultants, in which connection he took an active part in consultation on long-range planning for Philco.

Following graduation from DePauw University, Mr. Allemang was

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POLES
FULL LENGTH TREATED *NORTHERN* WHITE CEDAR

They are light in weight—easier to transport and set; they are clean and dry—easy to climb—safe for linemen. They are pleasing in color—neat in appearance.

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DISTRIBUTED BY AUTOMATIC ELECTRIC SALES CORPORATION • • • STROMBERG-CARLSON COMPANY

employed by the Indiana and Michigan Electric Company, a leading public utility. Later he became chief engineer and assistant plant manager of Bendix Aviation Corporation and has been associated with several leading manufacturing concerns.

John E. Garner Joins Stromberg-Carlson Co.

JOHN H. Voss, chief telephone engineer of Stromberg-Carlson Co., Rochester, N. Y., has announced the appointment of John E. Garner as

JOHN E. GARNER has been named supervisor of equipment design by the Stromberg-Carlson Co.

supervisor of equipment design. Mr. Garner will report directly to Harry M. Bruckart, assistant chief telephone engineer in charge of Systems Engineering.

Mr. Garner studied electrical engineering at the University of Pittsburgh, and then joined the Western Electric Co., in 1940, as an installer. Working out of the Philadelphia office, he helped in the installation of the New York to Harrisburg coaxial cable. Later he had supervisory duties in equipping the Indiantown Gap central office and the associated toll board in nearby Lebanon, Pennsylvania. Several other step-by-step exchanges in Eastern Pennsylvania followed.

In 1942 Mr. Garner volunteered for duty with the Signal Corps, working principally on the establishment of VHF fighter control systems. Subsequently he was sent to Havana, Cuba, directing the assembly processes

(Please turn to page 98)

TESTED *and* INSPECTED
to insure long service, top performance

A complete system of quality controls guarantees the durability and dependable performance of Armstrong's Glass Insulators. They're tested for mechanical strength, accuracy of thread contour, and resistance to thermal shock. Finally, insulators are individually inspected to make sure every one measures up to the same high standards of quality.

Armstrong's Glass Insulators are highly resistant to weathering and surface leakage. They'll safely support long, heavy spans—won't rock or wobble on pins. For details, see your supplier or write Armstrong Cork Company, Glass and Closure Division, 295 Fifth Avenue, New York 16, N. Y.

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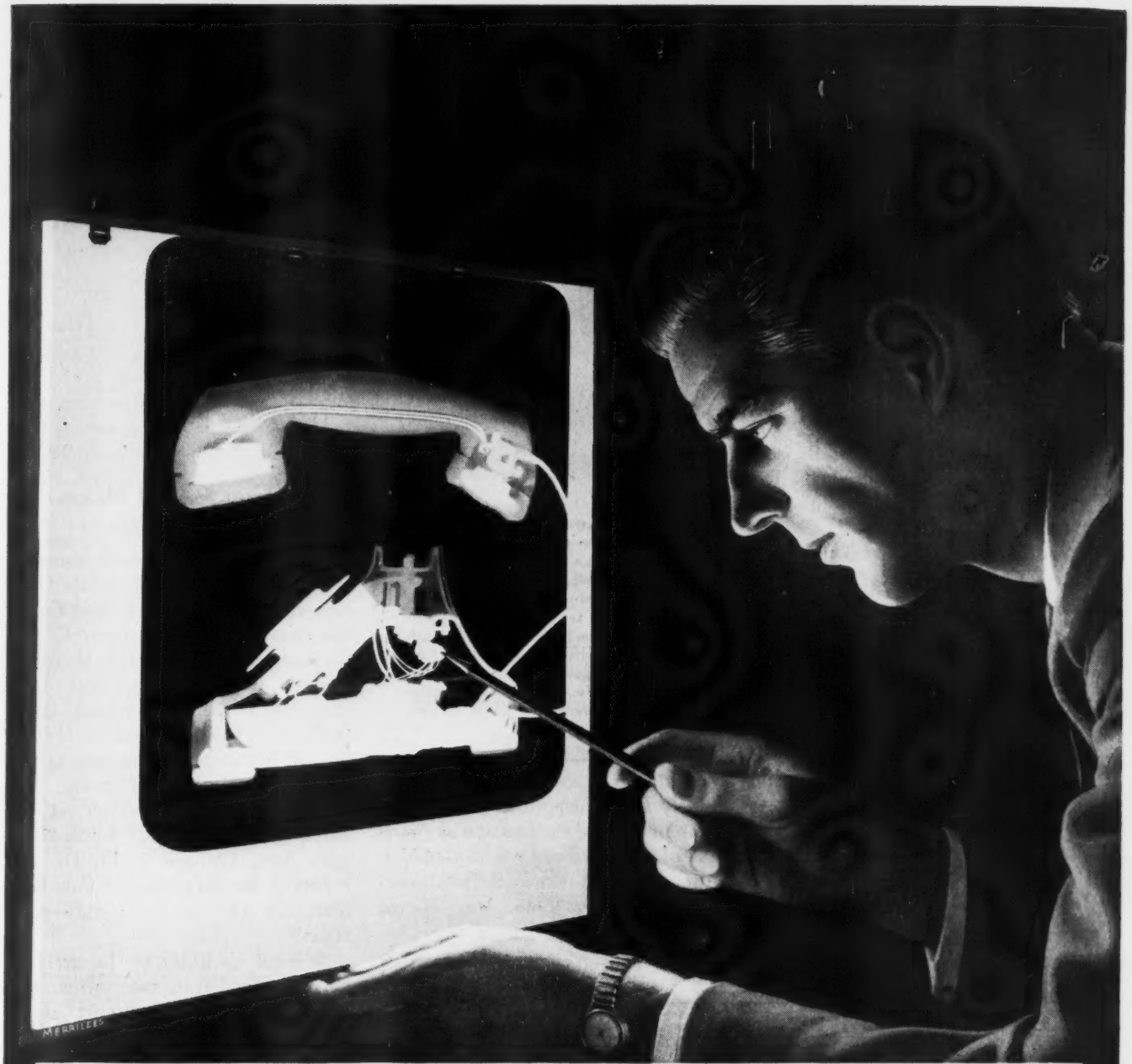
for communications . . . for power



Nothing is taken for granted at Western Electric. We test and inspect, and check again . . . even X-ray cameras are used.

People take the telephone pretty much for granted—seldom give a thought to the *dependable equipment* that helps make possible *good service.* We at Western Electric are glad this is so—for it shows we must have done our job well.

Western Electric

A UNIT OF THE BELL SYSTEM SINCE 1882

of a 10,000-line installation for Cutelco.

More recently Mr. Garner has seen service with a large independent operating group as building and equipment engineer.

New 5-Pair Rural Distribution Cable

A NEW RURAL telephone distribution cable which makes it possible to increase pole line capacity without adding new crossarms has been announced by Whitney Blake Co., New Haven, Conn.

The five pair cable consists of individual conductors of #20 AWG hard copper insulated with Buna S and jacketed with neoprene. The pairs are cabled around a high strength steel core.

The manufacturer states the cable can replace five pairs of open wires for telephone distribution. It can also be used a multiple drop wire to small apartments or business establishments.

Advantages of the design include light weight, high strength, compactness, excellent electrical characteristics, simplified installation, and ready accessibility of individual conductors for addition of new stations.

P. W. Lotz Elected Joslyn President

AT THE ANNUAL Meeting of the board of directors of Joslyn Mfg. & Supply Co., Chicago, Ill., M. L. Joslyn relinquished the position as chairman of the board and was elected honorary chairman. Bently S. Handwork, president since 1945, was elected chairman.

Mr. Handwork entered the employ of Joslyn on Jan. 1, 1912, and was elected a director in Jan. 1913, vice president in Jan. 1920, and president on Sept. 10, 1945.

Philip W. Lotz, executive vice president, was elected president and chief executive officer to succeed Mr. Handwork. Mr. Lotz joined the Joslyn organization in Sept., 1920. He was elected a vice president and director in 1935, and executive vice president in Dec., 1947.

Burton M. Smalley, vice president in charge of manufacturing, was elected executive vice president to succeed Mr. Lotz. Mr. Smalley has been with Joslyn since 1918, and was elected vice president and director in 1936.

ROBERT E. GRAHAM has been named engineering representative in the sales engineering division of the Lenkurt Electric Co., San Carlos, Calif., manufacturers of telephone and telegraph carrier and radio equipment. Graham was with the Long Lines Department of the American Telephone & Telegraph Co. for 21 years. Before joining Lenkurt he was sales manager of Communications Co., Inc., radio equipment manufacturers in Coral Gables, Fla.

Oliver Iron & Steel Makes Organization Changes

B. W. JOHNSON, general manager of Sales—Pole Line Materials Division of the Oliver Iron & Steel Corp., has announced the transfer of C. Rea Guthridge, former Ohio-Michigan District Representative, Pole Line Materials Division, Cleveland, Ohio, to Chicago, Illinois, to assume the duties of Midwestern sales manager—Pole Line Materials Division. Mr. Guthridge will headquarter at the corporation's office, 122 South Michigan Ave., Chicago 3, Ill. He will supervise the corporation's Pole Line Materials activities in 13 midwestern states.

William C. Ridinger, formerly of Oliver's Pittsburgh sales office succeeds Guthridge as district representative in the Ohio-Michigan territory. He will make his headquarters in Cleveland, Ohio.

Lenkurt Electric Releases Book On Carrier Terms

DEFINITIONS OF 150 terms commonly found in telephone and telegraph carrier equipment literature are given in new Lenkurt Bulletin EB-101, "A Dictionary of Carrier Terms." The 16-page booklet also includes a general discussion of carrier equipment theory.

Copies of this new publication are available from: Lenkurt Electric Co, 1141 County Road , San Carlos, Calif.

Paul Dimmick Named Holan Sales Manager

BROADENED EXECUTIVE contact in the domestic and export public util-

Sales Executive Club of Chicago recently honored two General Telephone Directory Co. salesmen as "outstanding revenue producers" in their respective territories. Shown above (l. to r.) are: JAMES E. ELAM, sales supervisor for the Directory Company's Michigan area; CHARLES T. LIPSCOMB, president of the Pepsodent Div'n of Lever Brothers; MARSHALL SMITH, sales supervisor for General's Kentucky area; and V. E. LOGAN, vice-president of the Sales Executives Club. Smith and Elam were presented with appropriately engraved sales "Oscar's" by Mr. Logan. The main address of the evening was delivered by Mr. Lipscomb.

PAUL V. DIMMICK, former sales manager of Holan's Cleveland District, has been appointed company sales manager.

ities field is an objective of important changes in sales organization announced by the J. H. Holan Corp., Cleveland, Ohio, makers of mobile construction and maintenance equipment.

V. H. Warner, vice-president of sales, has appointed Paul V. Dimmick, formerly sales manager of Holan's Cleveland district, to take over direct supervision of the field organization as sales manager. Arthur C. Frank, formerly sales manager of Transport Products Co., Cleveland, becomes Cleveland district sales manager for Holan.

Both men are veterans of the utilities body field. Prior to joining

(Please turn to page 100)

ARTHUR C. FRANK has been named Cleveland district sales manager for the J. H. Holan Corp.

RAYTHEON RECTICHARGERS®

(BATTERY CHARGERS)

The same Raytheon RectiChargeRs which are standard equipment throughout the Telephone Industry also provide unfailing current for safeguarding vaults There is no more convincing testimony to DEPENDABILITY than the application of this equipment to the Protective and Alarm Systems employed by Banks from coast to coast.

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ADD UP THESE ASSETS — *Raytheon RectiChargeRs are fully automatic in operation . . . always follow the load . . . maintain constant voltage output over the complete load range . . . prolong battery life . . . prevent overcharging and undercharging . . . contain no moving parts to wear out . . . require no routine maintenance other than inspection only once or twice a year* — and you have the standard, time-tested battery charger of the constant potential type, the ideal equipment for year in, year out dependable Telephone service at low cost.

Complete line for all Telephone Needs

Catalog Number	Battery Cells	Amps. Cont.	Input Voltage	Control
RCR-1066B RCR-1058B RCR-1067B	11/12 11/12 11/12	1.0 3.0 6.0	115 Volts, 60 cycle, 1-phase	Magnetic
RCR-2013A RCR-2016A	11/12 11/12	12.0 24.0	115 or 230 volts, 50 or 60 cycles, 1-phase	Electronic
RCR-1068B RCR-1069D RCR-1070D	22/24 22/24 22/24	1.0 3.0 6.0	115 volts, 60 cycle, 1-phase	Magnetic
RCR-2016B	22/24	12.0	115 or 230 volts, 50 or 60 cycles 1-phase	Electronic
RCR-3525 RCR-3550 RCR-35100	22/24 22/24 22/24	25.0 50.0 100.0	208 or 220 volts, 50 or 60 cycles 3-phase	Magnetic Amplifier

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MANUFACTURING COMPANY
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DEPT. 6270-TE, WALTHAM 54, MASSACHUSETTS
DISTRICT OFFICES: BOSTON, NEW YORK, CLEVELAND, CHICAGO, NEW ORLEANS, LOS ANGELES (WILMINGTON), SAN FRANCISCO, SEATTLE
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RAYTHEON PRODUCTS INCLUDE:
MARINERS PATHFINDER* radar; Submarine Signal FATHOMETERS*; Marine radiotelephones; WELDPOWER* welders; Voltage stabilizers (regulators); Transformers; RectiChargeR* battery chargers; RectiFilteR* battery eliminators; Sonic oscillators for laboratory research; Standard control knobs; Electronic calculators and computers; Television receivers; Radio, television, subminiature and special purpose tubes; MICROTHERM* diathermy and other electronic equipment. *Reg. U. S. Pat. Off.

Your regular Supplier offers the complete line of Raytheon RECTICHARGERS for all Telephone requirements. Ask him for complete information, or write us direct.

Holan in 1950, Mr. Dimmick was for several years on the sales staff of the American Coach & Body Co., then of Cleveland. He is widely known among utilities transport men.

Mr. Frank also is an alumnus of the old American organization. Starting there as a youngster fresh from Bradley Polytechnical Institute, he graduated through clerical and production departments, plus three years military service, to a position in sales. He went from there to Transport Products. As sales head of the Cleveland District he will be in charge of Ohio, Michigan, Indiana, Kentucky and West Virginia.

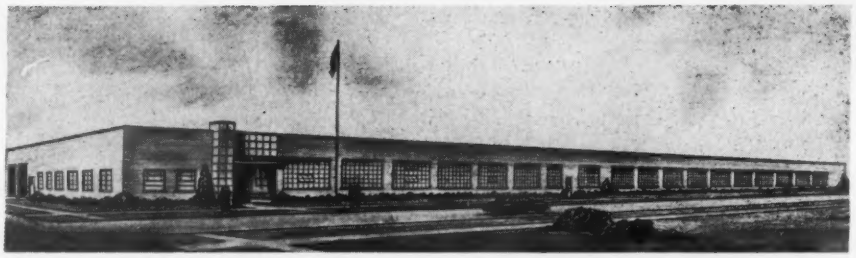
Cook Electric Builds Factory Addition

COOK ELECTRIC Company has begun construction of an addition to its Wirecom Division, which manufactures protection and distribution equipment for the Independent telephone industry and U.S. Signal Corps. This addition is required for the manufacture of new products currently being introduced by Cook. The first of these is the new Cook P-L-X unprotected pole cable terminal designed especially for plastic cable.

This terminal provides for the continuous looping and termination of the cable on the pole without splicing or stubbing. The high impact, low absorption bakelite XB face plate with Everdur studs is incorporated. It is time proven in use in over a million Cook X-B Type cable terminals.

When making connections, the bakelite face plate opens to a horizontal position for convenience — when closed it is sealed against moisture with a heavy neoprene gasket and is ready for substation drop wire connections. A zinc hood, and patented weather guard, complete this compact symmetrical terminal.

The new cable terminal will be in production in April.



Cook Research Laboratories, a division of Cook Electric Co., Chicago, has moved to its new building located at Skokie, Ill. Increase in demand for the services, however, now requires a new addition which will provide 50% more space. The new building will be completed in July and will enable the Laboratory to increase its staff to 350 scientists, engineers, technicians and attendant personnel.

Thompson Issues Report On Right-of-Way Clearance

MARKING THE continual improvement in manufacture, mixing and application of its brush killers, Thompson Chemicals Corp. has re-

Need Holes in Concrete?

YOU GET MORE HOLES WITH TERMITE DRILLS!

Penetrate toughest concrete with less pressure and with less drill wear . . . with TERMITE DRILLS. Pulverizing action eliminates objectionable noise. Exclusive construction gives you cleaner, more accurate holes in less time and at less cost. Use with standard electric drills or air motors.

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Lengths up to 36". Standard diameters from 3/16" to 5". Other diameters up to 8" on special order.

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THE Cromwell HOTEL

. . . The hotel that's suited to both taste and budget. Convenient location . . . one-half block from all transportation . . . within 5 minutes of the center of downtown Los Angeles. All guest rooms refreshingly decorated and comfortably furnished in modern tempo . . . all with radio . . . tub or shower baths. Spacious lobby-lounge. Thrifty rates.

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Other Alcarr Hotels:
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The Cortez

LOS ANGELES

leased a report, in cooperation with the United States Department of Agriculture, on its 1952 field research on the use of chemicals for right-of-way clearance and maintenance.

The report covers the third year of research of the Thompson field staff on more than 3,000 acres located in the Arkansas and Missouri Ozark regions. This area was selected by the company for its research because almost every type of brush and weed problem is encountered here. Moreover, the rugged terrain provided an opportunity to work out solutions to spray problems which are encountered along right-of-way elsewhere.

Pentyl esters, the company states in its report, proved to give maximum, almost perfect kills at costs considerably lower than old-fashioned formulations. Not only are chemical costs lower but the more effective action reduces labor and application costs, it is held.

Both foliage spraying and basal bark application techniques are reported on as well as the use of truck, tractor and knapsack sprayers.

A copy of the report known as Station Paper 12, may be obtained by writing the Thompson Chemicals Corp., St. Louis 3, Mo.

Joins Automatic's Sales Engineering Staff

CHRISTIAN CHRISTENSEN, formerly a member of the equipment engineering department of Automatic Electric Co., was appointed staff sales engineer of Automatic Electric Sales Corp. on April 20. Announcement of the appointment was made by L. H. Warner, president of the sales company.

C. CHRISTENSEN

In his new position, Mr. Christensen will work closely with engineers and managers of Independent telephone companies on matters of central office conversions, local and toll switching, and other equipment and plant requirements.

Mr. Christensen's service with Automatic Electric dates from 1928, when he entered the drafting department as a cable designer. Later, he became supervisor of the cable design section. In 1939, he was transferred to the equipment engineering department where he became engaged in a broad range of exchange engineering and equipment design assignments. In the course of this work he had the opportunity of working closely with many of the Company's important customers, and became widely familiar with the operating requirements of exchanges of various types.

This most recent addition to the Automatic Electric sales engineering staff is in line with the policy of the Company of maintaining its engineering service to customers at a high level of effectiveness.

HERBERT E. REYNOLDS has been named manager of Lenkurt Electric Co.'s branch office, 330 S. Wells St., Chicago. The new branch is providing applications engineering service to the Automatic Electric Corp., 1033 W. Van Buren St., Chicago, distributor of Lenkurt products. Mr. Reynolds has been a member of the Lenkurt sales engineering staff at San Carlos since 1951. He formerly was a transmission engineer for the Illinois Bell Telephone Co., Springfield, and plant engineering superintendent of the DeKalb-Ogle Telephone Co., Sycamore,

Telephone subscribers *like to use* telephones equipped with Koiled Kords. This is one of the best reasons why more and more independent telephone companies are specifying Koiled Kords as standard equipment on new phones.

Koiled Kords *make sense* on telephones. They don't kink, are much less likely to catch or break. Damage to equipment falls off sharply when Koiled Kords are used.

The simplest way to have your telephones equipped with Koiled Kords is to buy them with Koiled Kords already attached. Follow the trend towards Koiled Kords as standard equipment by specifying them for all new telephones.

Remember, it's your business to give good service. Use Koiled Kords to help keep customers satisfied, keep maintenance costs down. Koiled Kords for replacements are also available from independent telephone suppliers trimmed to fit all standard hand sets.

Koiled Kords
INCORPORATED

BOX K
NEW HAVEN 14, CONN.

KELLOGG...

for SUPPLIES

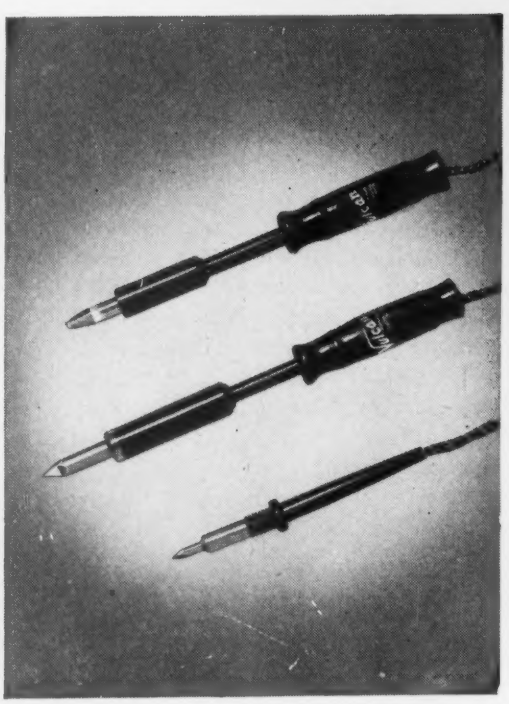
Well-stocked inventories of guaranteed line supplies are carried in Kellogg warehouses located in Chicago, Kansas City, Dallas, San Francisco, and St. Paul. Order from the warehouse nearest you and be assured of prompt deliveries.

- **The following nationally-known manufacturers of supplies for the independent telephone industry are participating in the Kellog Co-operative Advertising Campaign.**

American Creosote Works, Inc.
Ansonia Wire & Cable Company
John Bean Division
Food Machinery and Chemical Corp.
Bishop Manufacturing Corporation
E. D. Bullard Company
Continental Cross-Arm Co., Inc.
Cook Electric Company
Copperweld Steel Company
Diamond Wire & Cable Company
The Electric Storage Battery Company
Everstick Anchor Company
General Insulated Wire Works, Inc.
Gould-National Batteries, Inc.
W. A. Hammond Drierite Company
Indiana Steel & Wire Company
Kester Solder Company
Lorain Products Corporation
National Carbon Company
A Division of Union Carbide and Carbon Corporation
National Telephone Supply Company
Newman Manufacturing Company
Ray-O-Vac Company
Raytheon Manufacturing Company
Reliable Electric Company
M. M. Rhodes & Sons Company
R T & E Co.
Schauer Manufacturing Corp.
Telkor, Inc.
Vulcan Electric Company

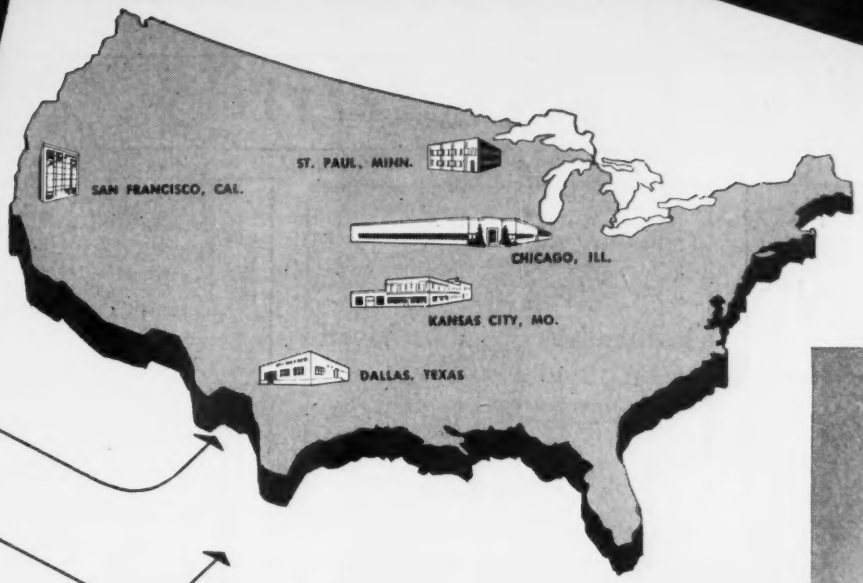
Improve Service, Reduce Costs and Power Supply Problems with RECTIFILTER. Eliminates installation of storage batteries . . . operates one or more P.B.X.'s. or one or more Key equipments direct from an A.C. source. Made by RAYTHEON MFG. CO.

Modern Cable Saves Money 3 Ways-Ansonia Ankoseal, the all-plastic, light-weight cable costs less to buy in the popular sizes, less to install, less to maintain. Available for aerial, duct and direct burial use. ANSONIA WIRE & CABLE COMPANY.



You'll Find Soldering is Easy... workmanship neater with famous Vulcan Soldering Irons. Available in five sizes—either plug or screw tip. The high-powered heating element assures even proper heat and long service. VULCAN ELECTRIC COMPANY.

Ringing Machine for Large or Small Telepho Systems! The compact TELERING ri through where other frequency conver fail. Self-starting, quiet running—deliver loud, clear ringing power. Cost of op tion is low. Made by TELKOR, INC.



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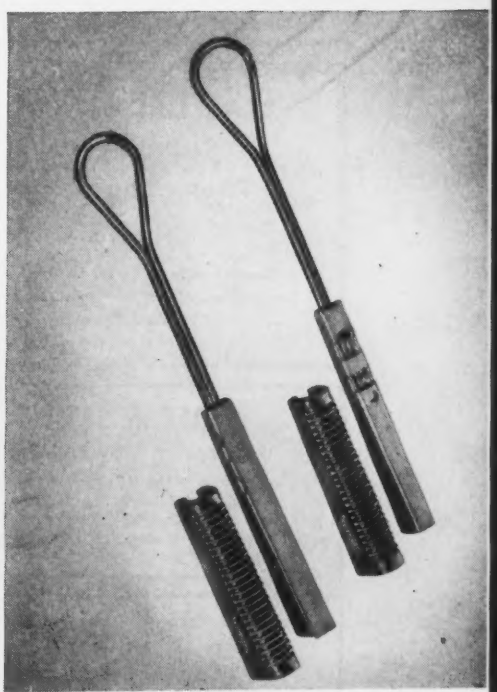
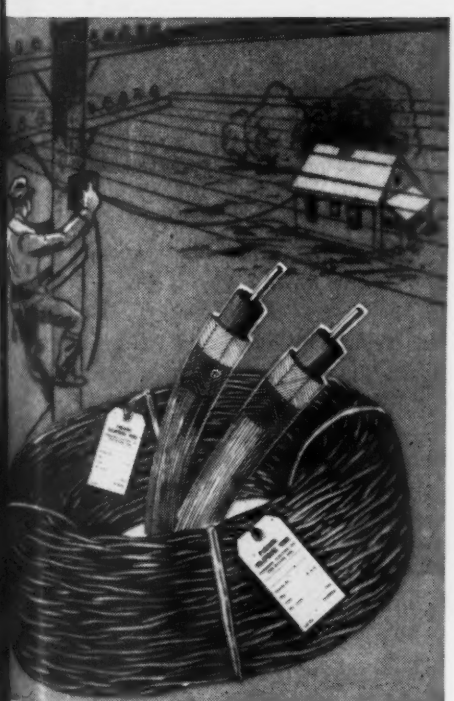
1063 Mission Street, SAN FRANCISCO 3, CALIF.

410 No. Syndicate Ave., "Midway Area", ST. PAUL, MINNESOTA

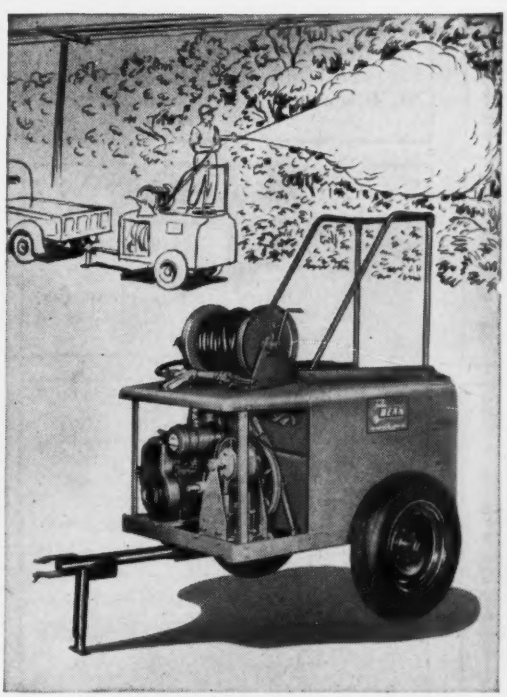
1515 Turtle Creek Blvd., DALLAS 2, TEXAS



No Snubbing or Rubbing. Insulation damage can be greatly reduced with Reliable Drop Wire Clamps. Wedge-shaped, they grip twisted or parallel drop wire tightly, and permit free swinging. All wear is placed on clamps. RELIABLE ELECTRIC CO.



eep Maintenance Costs to a Minimum with IAMOND WIRE & CABLE CO.'s drop ire. Great tensile strength, high conduct- ivity, long-life and perfect adhesion are me of its outstanding qualities. Available Copperweld or High Tensile BB Bronze.



Use John Bean Versatile Power Sprayers for economical chemical control of weeds on telephone right-of-ways. Model shown above can be drawn by jeep, passenger car, light truck or tractor. JOHN BEAN DIVISION, Food Machinery and Chemical Corp.

The Expanding Plates and Spreader Arms of Everstick Anchors insure 100% safety and maximum holding power under excessive strain. Ribbed base plate allows anchor to be locked solidly on rod. Quickly installed. Made by EVERSTICK ANCHOR CO.

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Construction — Trimming
Station Installers — Cable Splicing
Chemical Spraying
Right of Ways

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A complete service to the Telephone, Electrical and Pipe Line operating companies.
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Construction Crews — Station Installers
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HENKELS & McCOY
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Now Operating in 14 States

RURAL LINE CONSTRUCTION
- All work guaranteed
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- Complete construction service

Serving Missouri and adjoining states
DAVIS CONSTRUCTION CO., Sullivan, Mo.

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Consulting Engineers
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Experienced in REA Procedures
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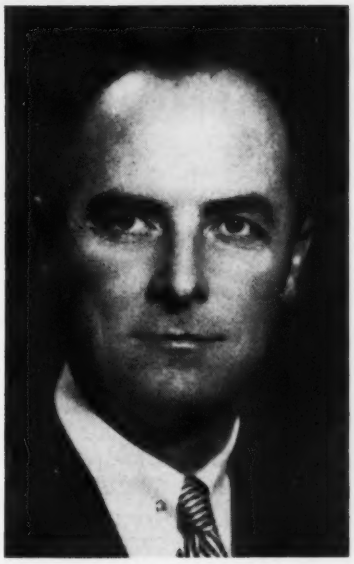
CARMAN R. HUGHES, vice-president and director of Automatic Electric Sales (Canada) Ltd.



E. R. O'KELLY, secretary-treasurer and director of Automatic Electric Sales (Canada) Ltd.

Automatic Electric Announces Canadian Changes

AUTOMATIC ELECTRIC SALES (Canada) Ltd. has announced that Carman R. Hughes has been named vice-president and a director of the company. This and the other organizational changes announced below are in line with the recently reported plans to expand manufacturing and sales activities of communications equipment in Canada.

Mr. Hughes joined the Automatic Electric organization in 1941 after previous service with the Northern Electric Co. He served in service, installation, and sales capacities and was appointed manager of the Telephone Sales Division in 1950. Mr. Hughes will continue to direct the sales of all communications equipment and allied lines.

E. R. O'Kelly has been elected secretary and treasurer and a director of Automatic Electric Sales (Canada) Ltd., and also of its manufacturing affiliate, Automatic Electric (Canada) Ltd. Mr. O'Kelly joined the Automatic Electric organization in Canada in 1937. He served during the war in command of a corvette on convoy escort with the R.C.N. He is a member of the Controllers Institute of America and a governor of the Certified Public Accountants Association of Ontario.

S. C. Bird has been appointed manager, Industrial Division, Automatic Electric Sales (Canada) Ltd. Mr. Bird, with Automatic since 1940, has been sales manager of Industrial Specialty products since 1945.

Automatic Electric (Canada) Ltd. is an associate of Automatic Electric Co., Chicago.

A new telephone manufacturing plant, modern and complete in every detail, will shortly be erected and operated by Automatic Electric (Canada) Ltd. It will continue to be staffed by thoroughly experienced engineering and production personnel and, in the meantime, present manufacturing facilities will be continued on an uninterrupted basis.

Both of the Canadian organizations will have available to them the world-wide resources of the Automatic Electric.

S. C. BIRD, manager, Industrial Division, Automatic Electric Sales(Canada) Ltd.

THE BUYERS' GUIDE and NEW PRODUCTS' SHOWCASE

For complete information on the products and services described in this department send in the coupon which appears on the opposite page. If you do not see a listing of the products and services that you are interested in, write BUYER'S GUIDE, 7720 N. Sheridan Road, Chicago 26, Ill. The information will be furnished quickly and without charge to telephone industry members.

ADVERTISING, Directories — *General Telephone Directory Co., 604 Pine Ave., Long Beach, Calif., and 1800 Busse Highway, Des Plaines, Ill.*—[ADV. 1]

BELTS — CLIMBERS — COMPLETE LINEMEN'S EQUIPMENT, *W. M. Bashlin Co., Bashlin Bldg., Grove City 1, Pa.*—[ADV. 2]

BELTS — CLIMBERS — PLIERS — SAFETY STRAPS — CONSTRUCTION TOOLS. *Klein & Sons, Mathias. 3200 Belmont Ave., Chicago 18. Ill.*—[ADV. 3]

BOOTHS—Acoustic Telephone — *Sherron Metallic Corp., 1202 Flushing Ave., Brooklyn 6, N. Y.*—[ADV. 4]

BRUSH & WEED KILLERS — *Thompson manufactures many types of brush and weed killers. Write for helpful information on specific problems. Thompson Chemicals Corp., St. Louis 3, Mo.*—[ADV. 5]

CABLE, All Plastic, Aerial, Duct, Direct Burial, PBX, Switchboard. — *The Ansonia Wire & Cable Co., Ansonia, Conn.*—[ADV. 6]

CORDS, Switchboard, Instrument and Operators —*Commercial Cord & Supply Co., Inc., 26 Main St., Clifton Springs, N. Y.*—[ADV. 7]

CORDS, Switchboard & Telephone — *Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago 41, Ill.*—[ADV. 8]

ELECTRIC HOT WATER HEATERS. *Thermostatically controlled for any hot water heater, Vulcan Electric Co., Danvers 17, Mass.*—[ADV. 9]

FURNACES — For quickly and economically melting lead and paraffin — *Mutual Liquid Gas Equipment Co., Inc., 3600 W. Imperial Highway, Los Angeles, Calif.*—[ADV. 10]

INSULATORS, Porcelain — *Porcelain Products Inc., Box 300, Findlay, Ohio.*—[ADV. 11]

LIGHTWEIGHT PULLERS — *Coffing Hoist Company, 800 Walters St., Danville 5, Ill.*—[ADV. 12]

PIPE PUSHERS — *Giant Manufacturing Co., South 6th St., at 12th Ave., Council Bluffs, Iowa.*—[ADV. 13]

POLE HOLE DIGGERS — *For derrick mounted trucks. Tele-E-Lect Products, Inc., 9613 Minnetonka Blvd., Minneapolis 16, Minn.* —[ADV. 14]

POLES, Southern Yellow Pine — *Colfax Lumber & Creosoting Co., Inc., P.O. Box 23, Pineville, La.*—[ADV. 15]

FIRST AID KITS: Davis First Aid Burn Kits now include an Aerosol automatic spray dispenser containing Americaine, the miracle pain-killing burn treatment. This was announced by Frank Davis, Jr., president of The Davis Emergency Equipment Co., Inc.

The company has also introduced a smaller kit with complete equipment for instant first aid treatment for burns.

In addition to the spray dispenser, the standard large kit contains Americaine in the form of a greaseless, water soluble ointment. Americaine in both forms is antiseptic, greaseless, excludes air, and kills pain almost instantly because of its principal active ingredient — 20% dissolved Benzocaine, widely used in medicine and dentistry as a rapid local anesthetic.

The Aerosol dispenser applies a quick gentle coat of pain-killing Americaine to burned areas. In addition, the kits contain an assortment of bandages and compresses. For descriptive literature, check New Product 520.

POLES, Southern Yellow Pine — *Taylor Colquitt Company, 290 E. Main St., Spartanburgh, S. C.*—[ADV. 16]

POLES, Southern Yellow Pine — *Texas Creosoting Co., Orange, Texas.*—[ADV. 17]

PROTECTIVE EQUIPMENT — *Reliable Electric Company, 3145 Carroll Avenue, Chicago 12, Ill.*—[ADV. 18]

REBUILT TELEPHONE & SWITCHBOARDS — *Telephone Repair & Supply Company, 1760 Lunt Avenue, Chicago 2, Ill.*—[ADV. 19]

TRUCK BODIES — *Highway Trailer Co., Edgerton, Wisc.*—[ADV. 20]

WIRE, Insulated — DATED DROP WIRE — Neoprene or Weatherproof — *Alphaduct Wire & Cable Co., Milltown, N. J.*—[ADV. 21]

WIRE, Insulated Drop and Bronze or Copperweld — *Acorn Insulated Wire Co., Inc., 36 Freeman St., Pawtucket, R. I.*—[ADV. 22]

WIRE, Telephone, *for all inside and outside uses* — *Whitney Blake Co., New Haven, Conn.*—[ADV. 23]

HANDLIGHTS: Stocker & Yale, Inc., offers two new fluorescent Portable Inspection units with or without magnification.

An ideal cool light source, designed primarily for use wherever close viewing is necessary.

A major step forward by the originators of localized fluorescent lighting, these units offer intense, glare-free, white light without the objection of heat and at low cost.

Small in size yet large in ability the two or four power lens is straddled by twin fluorescent lamps for maximum seeing ability and comfort. These new Lite-Mite units can be equipped instantly for Ultra-Violet radiation. Lamps are rated at 7500 hours life which normally represents three years normal use. Built for years of rough usage, Lite-Mite lamps are inexpensive to purchase, operate and maintain. — For a complete catalog check new product 521.

MAGNET: New G-S Litte Giant Magnet, made of super-magnetic alloy, is no larger than a fountain pen. Point of magnet is extended or retracted from a case by turning end-knob. Strength of magnet can be controlled by amount of extension. Pocket clip is provided for safe, easy carrying. Diameter of magnet ¼", total length 6¼".

The G-S Magnet No. 15 is particularly useful for removing steel or iron particles from areas where such foreign matter is harmful,

such as the operating area of electrical instruments or delicate mechanisms. It will also conveniently remove sharp particles of steel, iron or nickel from storage bins and retrieve magnetic particles from holes and similar hard-to-reach places. — Check new product 522.

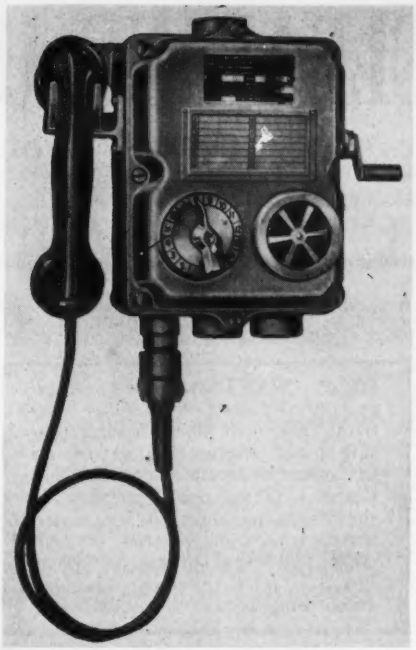
EYE SWEEP: Wherever industrial accidents occur, and especially where workers are exposed to flying metallic fragments, magnetic attraction, the G-S Eye Sweep is an indispensable unit of first aid. It is a handy, convenient instrument for Industrial first aid, clinic, hospital and physicians office.

One end is fitted with a magnet for removing steel splinters, while the other is fitted with a flexible loop for removing cinders, dust and other particles. Sterilization of the instrument will not diminish the magnetic qualities nor affect the loop. A hard rubber carrying case is provided with each Sweep. For Complete Data, Check New Product 523.

EXPLOSION-PROOF TELEPHONE: New explosion-proof telephone, manufactured by Crouse-Hinds Co., Syracuse, N. Y. is sheathed in two sections of aluminum housing that are made flame-tight by accurately machined joints and large screws. Unlike ordinary telephones, it is powered by the sound of the human voice. The voice causes fluctuations in the magnetic circuit of the telephone's transmitter which creates an electrical current. This current, hardly measurable by ordinary electric instruments, is transmitted to the receiver where sound waves are created, reproducing the speaker's voice.

The explosion-proof telephone not only provides for communication in and around hazardous areas but also permits communication with other sound powered telephones within a range of 30 miles.

A fixed hook is attached to the left side to support the handset. No cradle switch is used, as a push button, located conveniently near the center of the handset serves this



purpose. The push button must be depressed and held for both transmitting and receiving.

To make a call the handset is lifted from the hook, the button depressed, and the line checked to make sure it is not in use. The selector switch is then turned to the number of the desired station and the magneto crank turned rapidly. This signals only the station called, with the talking circuit completed when the buttons are depressed and held on both handsets.

Since these telephones are equipped with U.S. Instrument Co. howlers and handsets, they may be installed in hazardous areas on the same system with U.S. Instrument Co. telephones in non-hazardous locations.

For further information check new product 524.

HOOK-SWITCH HOWLER: — The unavoidable, and sometimes excessive time lost by linemen and mobile equipment in making service calls due to improperly disconnected hook-switches has practically been eliminated through use of a new type of howler being manufactured and distributed by Tele-Systems, Inc., 6442 Santa Monica Blvd., Los Angeles 38, Calif. With this new type of

howler, when the subscriber hangs up in response to the "Beep" signal, the howler automatically disconnects itself, instantly freeing any line when improper disconnect operation is corrected.

The Tele-Systems Hook-Switch Howler features two indicator lights. The red light shows when the unit is operating and the subscriber's phone is improperly disconnected. The green light indicates when this condition has been remedied and the Howler is off the line.

Easy to operate and entirely portable, the Tele-Systems Hook-Switch Howler is sold ready to use, including 6-feet of power-connector cord and plug together with 10-feet of Main Frame connector cord with clip terminals. To use merely plug Howler unit into the AC and DC power circuits, then clip across the line at the Main Frame. The Howler does the rest.—For illustrated folder describing the device, check New Product 525.

IF YOU DO not see a listing in these columns of products or services you are interested in write "Buyers' Directory", 7720 Sheridan Road, Chicago, Illinois, for such information.

SEND IN THIS COUPON FOR MORE INFORMATION

Telephone Engineer Publishing Corp.
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Please forward complete information on the following products and services described in the June, 1953 issue of TELEPHONE ENGINEER & MANAGEMENT. (Check information desired.)

NEW PRODUCTS

NP 520 ___ NP 521 ___ NP 522 ___ NP 523 ___ NP 524 ___ NP 525 ___

SERVICES AND SUPPLIES

ADV. 1 ___	ADV. 2 ___	ADV. 3 ___	ADV. 4 ___	ADV. 5 ___
ADV. 6 ___	ADV. 7 ___	ADV. 8 ___	ADV. 9 ___	ADV. 10 ___
ADV. 11 ___	ADV. 12 ___	ADV. 13 ___	ADV. 14 ___	ADV. 15 ___
ADV. 16 ___	ADV. 17 ___	ADV. 18 ___	ADV. 19 ___	ADV. 20 ___
	ADV. 21 ___	ADV. 22 ___	ADV. 23 ___	

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OUTSIDE PLANT ENGINEER. Not over 30 with some outside plant engineering experience in communications. Class A company. Furnish age, experience, education, present employment and expected salary. Write General Plant Superintendent, Illinois Telephone Company, Bloomington, Illinois.

GENERAL SALES MANAGER in 35 to 45 year age bracket. Qualified to assume full responsibility for organization, direction and building of sales force for growing telephone supply company. Preferred consideration given to those with telephone engineering and operating experience. Salary dependent on qualifications. General requirements — ambitious, hard working and interested in aggressive and productive business. This position is for someone who believes he can really produce and wants to be fully compensated for his achievements. Here is the challenge and opportunity of responsibility with production, not seniority, the policy. Telephone and Power Supply, Inc., 3100 Topeka Blvd., Topeka, Kansas.

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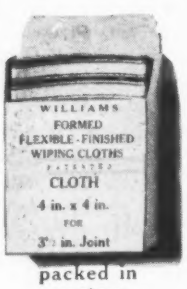

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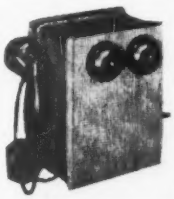

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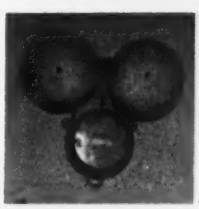

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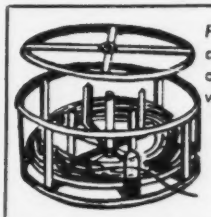

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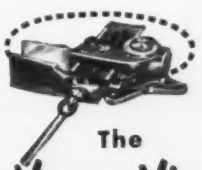

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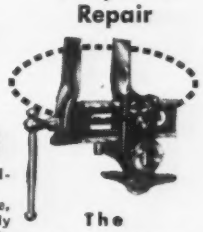

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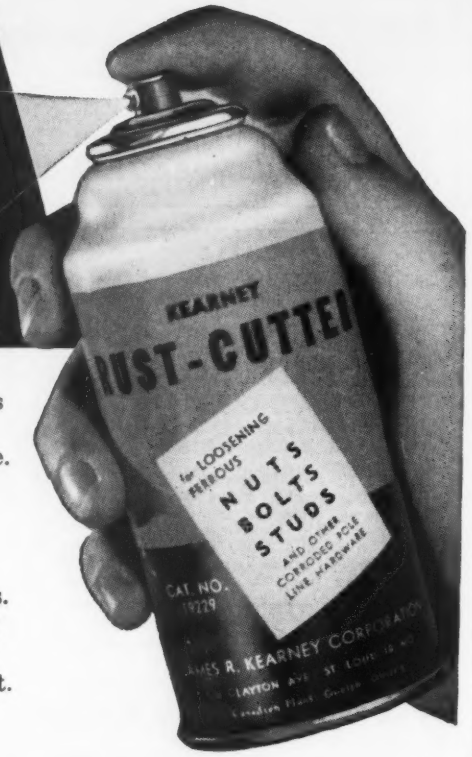

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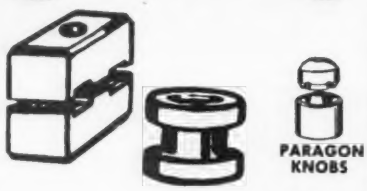
"C" PORCELAIN "S" PRODUCTS
KNOBS



PARAGON KNOBS

SCREW EYES

T KNOBS

No. 6062

No. 6061

STRAINS TREE KNOBS No. 4-2 GR. TUBES

For decades Porcelain Products C and S knobs have set the standards for insulator quality and service in the telephone industry. They help you maintain your reputation for *reliability*. The same is true of Porcelain Products complete and diversified line of telephone insulators. Available through your jobber Ask him for your copy of our reference booklet on telephone insulators, or write direct.

PORCELAIN PRODUCTS, INC.
FINDLAY, OHIO

Stromberg-Carlson Advances Averill To New Post

JOHN W. AVERILL has been appointed purchasing agent for the Stromberg-Carlson Co., Rochester, N.Y., according to Gordon G. Hoit, vice-president. Mr. Averill takes the position formerly held by David Rogers who has resigned to become a manufacturer's representative in another city.

Mr. Averill has been associated with Stromberg-Carlson since 1942 and has served in the purchasing department since 1946. During the war years, prior to his military service, he was engaged in production control for the company. Before joining Stromberg-Carlson and upon graduation from college, Mr. Averill was associated with his father in the oil distributing business.

Born in Angelica, New York, Mr. Averill was educated in the public schools of Rochester and Canandaigua, New York. A graduate of the University of Pennsylvania, class of 1935, he majored in economics, earning his B. S. degree in industrial management.

Commissioned a lieutenant (j.g.) in the U.S. Naval Reserve in 1943, Mr. Averill saw service as a commanding officer on YMS 407 (minesweeper). Received his commission as lieutenant in 1945 and returned to Stromberg-Carlson as a civilian in 1946.

Whitney Blake Announces New Nylon-Jacketed Wire

A NEW TYPE of distributing frame wire with semi-rigid polyvinyl chloride insulation has been announced by Whitney Blake Co., New Haven 14, Conn. Improved features, according to the manufacturer, include superior insulation resistance, electrical stability under high humidity conditions, high compression strength, excellent resistance to abrasion and permanent colors.

The wire is offered in two and three-conductor styles with #22 AWG tinned copper conductors. The Plastite insulation is color coded either black and white or red and white for twisted pair, and black, white and red for triple. It is claimed that the wire is easy to terminate since the insulation strips cleanly from the conductors assuring good electrical contact.

STROMBERG | CARLSON

transmitter

Published by the makers of famous XY Equipment

VOL. 2 NO. 3 JUNE 1953

Life Testing of Stromberg-Carlson XY Components Supports Confidence in Performance

By Robert M. Seibert, Engineer-in-Charge, Test Engineering

The Value of Life Testing

A life test is an accelerated operational test. Much can be learned in the laboratory which will prevent costly stoppages in the field. Literally translated, the term infers testing for *ultimate life*, where in the equipment under test methodically wears itself out. Many life tests are made in this way. In the majority of cases, however, the life test is aimed more at determining the *stability* of the device over a given number of operations or period of time than in establishing the break-down point.

Instability of a product naturally comes from many causes. Some of the most prevalent are changes in physical and electrical "constants," breakage and wear. Fortunately, the effect of these causes in most cases

Elliot H. Otterbacher, XY Switch Design Engineer, and Eugene Shaffer, Laboratory Engineer, have good reason to be proud of "Old 31," which has already been life tested for the equivalent of 250 years! This switch is still going strong.

Relay A-Type Springs	Swinger Spring Material	Contact Pressure Measured at Contacts in Grams. Readings Show Operations in Thousands (10^3)												
		0	5	10	15	25	50	100	200	500	1,000	5,000	10,000	20,719
Back Pressure 1 ✱ 2	Phosphor	28	27	28	30	30	29	26	26	27	25	28	28	28
Front Pressure 3 ✱ 2	Bronze	30	30	32	28	26	28	25	26	25	20	19	17	21
BP 4 ✱ 5	"	26	26	26	28	25	26	25	24	25	24	25	25	27
FP 6 ✱ 5		30	34	32	28	27	27	25	25	20	20	19	23	17
BP 7 ✱ 8	"	30	30	30	28	30	30	27	27	28	26	28	27	27
FP 9 ✱ 8		30	34	30	40	28	35	26	26	22	24	18	20	20
BP 21 ✱ 22	Ni Silver	25	25	25	25	25	26	25	25	26	25	26	27	27
FP 23 ✱ 22	18 %	30	25	28	23	25	25	26	20	25	15	18	14	13
BP 24 ✱ 25	"	25	32	30	30	31	30	30	26	30	30	35	31	30
FP 26 ✱ 25		26	27	34	27	24	24	30	22	25	17	23	15	15
BP 27 ✱ 28	"	30	27	25	26	27	26	25	24	25	25	27	23	28
FP 29 ✱ 28		26	25	27	25	20	20	20	24	16	16	17	17	15

Part of CT 1529
Test Completed Jan. 26, 1953
Jamieson

STROMBERG-CARLSON transmitter

In the life tests of "A" type relays, contact pressures are measured at frequent intervals. Gilbert Dole, Mechanical Engineer, and Donald Jamieson, Laboratory Engineer, are analyzing and rechecking data taken in life test.

may be found by examination and measurement. Both the examination and measurement lend themselves to analysis and thus the solution to the problem is started.

Anyone who has operated life tests will recognize that it is impossible to simulate *all* operating conditions in a laboratory. Plans for the test must be based upon experience and regulated by a carefully thought-out measurement and analysis program. Even with the most careful planning, it is sometimes necessary to halt in midstream, so to speak, and start over because some small point was not covered during the initial stages.

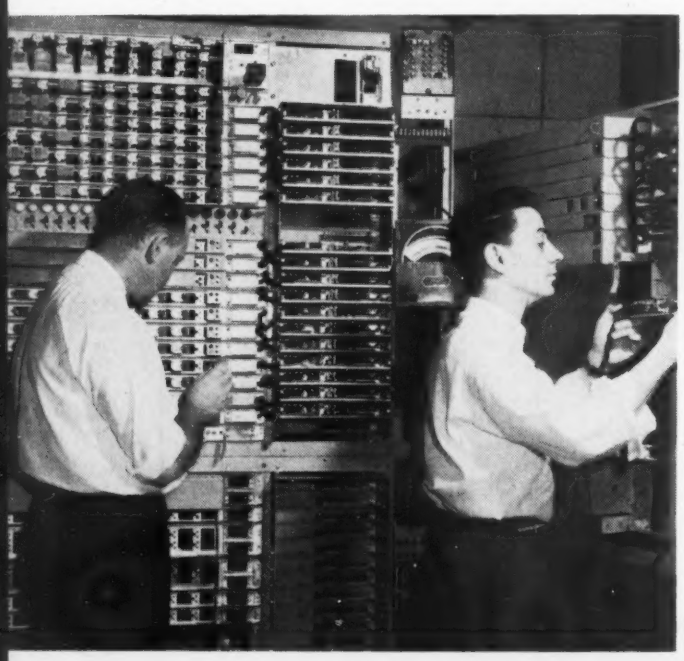
Kinds of Data will Differ

The exact data taken depends upon the device being tested. Usually, the initial conditions are measured and recorded and the measurements are repeated at frequent intervals during the first phases of the test. As the test progresses the measurement increment becomes larger and larger until the test is completed. As each series of measurements is taken, the situation is analyzed and "branch" tests are started as required.

Life Testing a Continual Process

Life tests are running continually in the Stromberg-Carlson laboratories. Each basically new device is life tested. If the design of a sub-part of an old design is changed, a new life test is begun to establish the quality of the change. A material substitution calls for another life test.

In addition to the tests on new and revised products, life tests are run on samples of current production. XY Switches are periodically removed at random from the production line and placed on life test in order to observe and evaluate changing production techniques. The same is true for the "A" type relay and other apparatus used in Stromberg-Carlson telephone equipment. This practice helps to assure performance which merits confidence.



XY Switches and A-Type Relays being life tested in laboratory.

MEET
Donald C. MacMillan

"Work is my hobby" best expresses Donald C. MacMillan's life story. After a year at Colgate University he transferred to the University of Rochester to study Mechanical Engineering. From there he came to Stromberg-Carlson in 1923. Starting in Drafting he was later assigned to Cable engineering. Following this in 1937, he was advanced to the Sales Engineering Department. After traveling the Southern and Eastern states as a Sales Engineer, he was assigned to the Rochester Branch, later acting as Sales Engineer in this territory until 1950 when he was promoted to Rochester Sales Manager — his present position.

Sales work in the telephone business is especially interesting to Mr. MacMillan because he likes telephone people, both in the company and in the field.

While he enjoys traveling, his main interest is his wife, the former Phyllis Knox, his daughter Janice, and his lovely home in Irondequoit.

The MacMillans are active in their community, both taking part in church and school affairs. Mrs. MacMillan is a Girl Scout Leader; Mr. MacMillan is a 32nd Degree Mason and a member of All Saints Episcopal Church. Janice follows the Scouting tradition and attained her Girl Scout Curve Bar this year.

Mr. MacMillan spends most of his time at home working on his home and garden, with time off for a few golf games. He admits that all of his telephone friends will agree on *one* thing: his golf score is "terrible."

STROMBERG-CARLSON transmitter

Emmaus, Pa., Brings XY To Its 4500 Subscribers

4500 now—Plenty of room for future expansion!

Miss Christine Miller, president, places first call. With her is Howard K. Deischer, burgess of Emmaus.

From the Allentown (Pa.) Evening Chronicle, May 7, 1953: "Plans for conversion of the Emaus Telephone Company to the latest type dial system were announced today by Miss Christine Miller, president."

From the Allentown Morning Call, Nov. 25, 1953: "Work has begun on the installation of the dial system in the Emaus Telephone Company's new building."

From the Allentown Sunday Call-Chronicle, March 15, 1953: "The 'Voice with a smile' started playing second fiddle to the whir of a dial and the click of switches as the Emaus Telephone Company's new dial system went into use last night right on schedule."

This tells the story all too briefly. Miss Miller has grown up in the telephone tradition: her grandfather, the late Dr. H. T. Wilkert, organized the company in 1909; her mother was president before her. So it was natural for Miss Miller to look to the future in making her plans, and select equipment that would give the best service for the years to come.

Because of its suburban character, Emmaus has always maintained the closest integration with the Bell Telephone Co. of Pennsylvania through its Allentown office. Thus the XY System utilizes the 2-5 numbering pattern, and everything is prepared to incorporate operator dialing of long distance calls over the intertoll network as soon as this is adopted in the metropolitan area.

It had been a serious problem for Miss Miller to offer the high grade of service which had been traditional, as the company grew from 1,000 to 4,500 subscribers in the last decade.

A modernization of the manual service was completed in 1947, even as various makes of dial equipment were being critically studied and compared. Now that she has the physical plant to permit a two-fold expansion beyond the present 1800 equipped lines, Miss Miller and Emmaus can go forward together confidently.

Editor's Note: Town of Emmaus, Pa., is spelled with two m's. However, the name of the telephone company preserves the old Biblical spelling with a single m.

An XY Power Board always attracts attention. With Miss Miller are, from left: Ralph H. Barger, Commercial Manager; Donald C. MacMillan, Manager Rochester Sales; Emmett L. Shanks, Pennsylvania Sales; and (kneeling) Joseph S. Ottalagana, National Sales Engineering, all of Stromberg-Carlson.

STROMBERG-CARLSON transmitter

***CONFERENCE SESSION.** Planning, review, materials evaluation, production problems, specification developments are subject of technical conferences.*

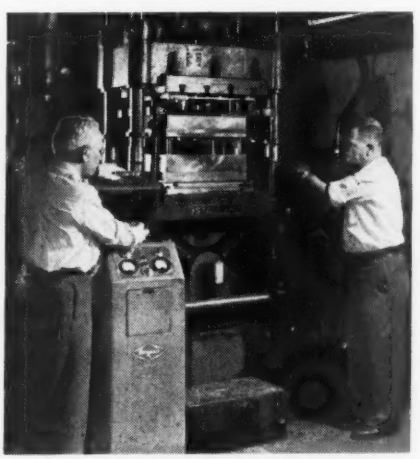
Materials Engineering Department

The Communications Industry is unique in its use of a wide variety of materials of construction. As the industrial research laboratories bring new materials on the market in the form of plastics, paints, metals, ceramics, platings, insulations — they must be thoroughly tested and quickly adopted where economy and efficiency are essential, as in this industry.

The Materials Engineering Department comprises several chemists, chemical engineers and plastics engineers. This service organization operates in an advisory capacity for all branches of the Stromberg-Carlson Company. For maximum efficiency this group is divided into sections and assigned specific fields of work. Through long associations with problems of the Company, and by constant contact with the technical literature, these sections are in a position to rapidly evaluate new materials, and to advise on current problems involving the use of all materials.

Specifically, an aluminum die casting may require exact duplication in an intricate mold. Technical conferences with suppliers and review of the literature indicates the exact alloy to use. This information is passed to the design group and the correct material is specified. Or a paint may require special properties under severe service conditions. Tests are made and data developed for the basis of specifications. This type work is repeated daily in the metallurgical group where ferrous and non-ferrous metals are specified together with heat treatment and fabrication techniques. Plastics are so numerous in type and properties that continuous study and evaluation is required to adapt them properly to communications equipment. Wire, with outstanding progress in the field of insulations, has become a major item of study.

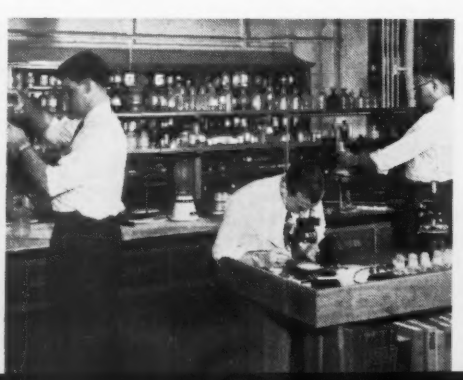
To support the activity of this Department a wide range of equipment is required. This takes the form of laboratory and production equipment. From the laboratory test tube and from 150-ton production presses comes the basic information that guides the choice of materials in Stromberg-Carlson Company equipment.



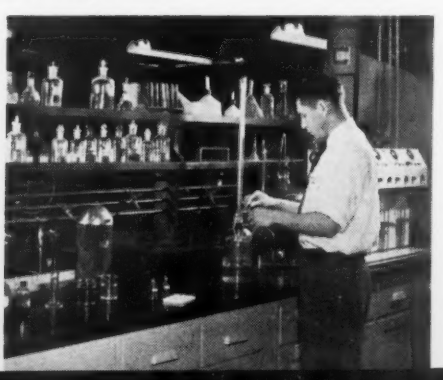
***PLASTIC LABORATORY.** New plastics and molding techniques are studied in this press to insure strength, appearance and functionality for the production line.*

***FINISHES LABORATORY.** Paint and lacquer systems are tested for durability, appearance, adhesion, wear resistance. Gloss measurement is being made with Gardner Glossmeter.*

***CHEMISTRY LABORATORY.** For analysis of new materials, and the chemical aspects of production problems.*



***METALLURGICAL SECTION.** Analysis to insure exact conformance with specifications. Heat treated structure and plating thicknesses are magnified 1000 times for minute examination. Special apparatus measures ductility and tensile strength.*



STROMBERG-CARLSON transmitter

Two Family Companies Improve Service with New Manual Boards

In Emery, South Dakota, it's a husband and wife team. In Merkel, Texas, the team is father and son. Both have decided to improve service by installing new Stromberg-Carlson manual switchboards as the best present answer for their needs.

Mr. and Mrs. Paul G. Hall of Emery, South Dakota, have had a long active career in the telephone business. Mr. Hall has grown with the industry — at 19, he was manager at Port Byron, Illinois, and recognized as the youngest manager in the state — he has stayed at the trade ever since. Mrs. Hall, too, has been active and last year joined the Independent Pioneers.

The town of Emery is completely cabled and changed to C.B. handsets with the latest model Stromberg-Carlson Manual Switchboard with automatic ringing features. This climaxes five years of progress. Mr. Hall not only manages the company but continues with outside cable splicing, too. With the assistance of Mrs. Hall as Chief Operator and Bookkeeper, they have improved service at Emery, and are pleased to have one of the finest independent plants in the state.

The Odums of Merkel, Texas, have replaced the old "coffee-grinder" with a modern "lift the handset." Father Harold spent 36 years with Western Electric Company; son Tom gained valuable experience in his 16 years with Southwestern Bell in Fort Worth. They own the company 50-50.

In the two years they've had the system, there has been a 150% increase in subscribers. Because these patrons are vitally interested in good telephone service, it is planned to let them in on the ownership in the near future. There are other exchanges in the system which will then be modernized.

The Odums believe in Merkel and each have purchased homes there. The citizens will benefit from the extensive telephone experience of this father and son team.

Life Now Pleasant in Pleasant Hill

When Walter Carlson, manager of the West Ohio Telephone Co., took over the Pleasant Hill exchange of 30 magneto subscribers in July, 1950, it became evident that service would have to be improved. Work was begun on the outside plant, cleaning up cables and rebuilding rural lines, and an order was placed for 140 lines of XY Dial equipment.

On March 7, 1953, the dial equipment which now serves 401 subscribers was cut in service. Of the 140 lines installed, 119 are now being used. The equipment is arranged to accommodate an ultimate of 400 lines.

Mr. Carlson stated that customer reaction has been wonderful. He was very pleased with the fine job done by the Stromberg-Carlson installers.

Testing lines just before cutover at Pleasant Hill, Ohio. From foreground, reading clockwise: John McPeak, Stromberg-Carlson installer; Walter Carlson, president, West Ohio Telephone Co.; William Powers, Stromberg-Carlson installer; Glenn Jordan, West Ohio Telephone Co. equipment supervisor.

XY School, Like XY Itself, is Growing

The photo speaks for itself. The April session of the XY Training School represented a selected group from XY users all over the country.

Managers, supervisors and wire chiefs from operating companies in eleven states, as well as eight representatives of the Armed Services were present.

STROMBERG-CARLSON **transmitter**

FACTORY TRIP

Sam Thompson is shown sanding turret for a No. 121 cordless Switchboard

August Appelhans, at right, shows Alex Ristich some of the fine points of gluing up cabinet sections.

The Cabinet Shop of the Telephone Division

This month your editor takes you to visit one of the busiest and most fascinating departments: the wood shop where all switchboard cabinets, information desks, turrets and like are fabricated.

When the pressure of orders called for expansion in some departments, the cabinet shop was asked to give up some space. It is amazing that, in spite of smaller quarters, the output has even been increased.

August Appelhans, department supervisor, shrugged off my reference to good planning. "Our boys just have to keep moving things along," he said, "or we'd all be buried alive."

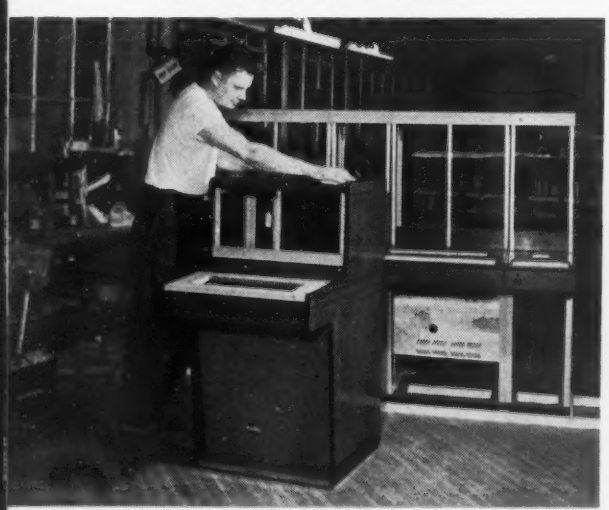
The work in the cabinet shop differs from most other departments in much the same way that providing telephone service differs from providing electric power: the multitude of variables.

One of the production engineers put it this way. There are ample engineering methods for metal — the machinery for metal working thinks nothing of limits of 5/1000". However, the same standard cannot be applied in woodwork. The problems become apparent when it is considered that the expansion and contraction of wood changes from kind to kind, even from piece to piece. This is not in a "reasonable" logical system, for humidity and temperature, growth rings and density of each piece gives it the individuality of a "living" material.

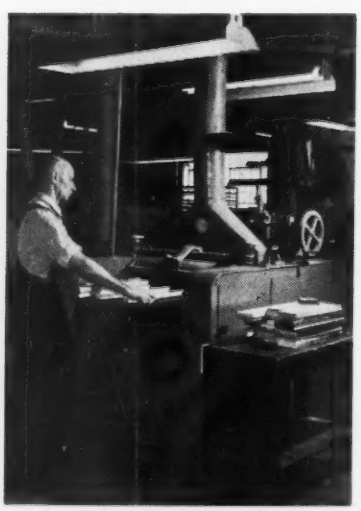
The chief requirements of switchboard woodwork are stability and good appearance. Wood up to now has not been replaced with any other material. Stability expectation in switchboard woodwork far surpasses that of the finest furniture — explained by the 24-hour usage of switchboards, for 30 to 50 years. Circuits and plugs can be replaced, but the outer shell — the cabinet and key and plugboard — must "take it."

Therefore, a constant search is maintained; constant inspection for the best grade of wood, properly seasoned and dried. New methods of lamination are tested by men whose experience in switchboard woodwork extends over a lifetime. Engineering alone does not do it — experience counts!

Frank Stepaitis gives a final rub-down to a two-tone No. 120 PBX cabinet.



Claude Atkins is master of many machines; one of the simplest is the late model Buss planer.



Happy Vacation!

This is the time of the year when thoughts turn to pleasant places and occupations. We at Stromberg-Carlson take this opportunity to extend good wishes for a happy vacation to our readers. For those who have recently changed from manual to XY Dial operation, this may be your first real vacation in a long time — may it be all that you have anticipated!

Your TRANSMITTER editor will welcome any photos of telephone people enjoying a well-deserved rest with their families.

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Plan to Attend USITA Convention, Conrad Hilton Hotel, October 12, 13, and 14.

THE BACK OF THE BOOK

By JOHN G. REYNOLDS

About The Telephone

THE KILMER EAGLE, published by and for soldiers at Camp Kilmer, recently carried this: " 'Hello, Mom, it's me' has become a commonplace phrase, but to Mom, or whomever it is on the other end of the line, these are the words for which she has been waiting these past years."

That brief statement gave us quite a lift. Understandably, veterans just back from overseas rush for the Telephone Centers at their first free minute. Same holds true for the lonesome recruit, wanting to hear Mom, or Dad, the wife or girl friend.

This, to us is the pleasantest side of the truly vast part that the telephone industry plays in the nation's defense program. The telephone network, of course, is vital to the Government, to all the Armed Forces, to Civil Defense agencies, and to thousands of plants humming with production to keep the nation strong. The industry's research and manufacturing units are deep in design and production of military electronic and communications equipment of many kinds.

Thus again the industry's normal job of serving subscribers has expanded to embrace a range from secret research on atomic projects, to enabling some soldier, fresh back from Korea, to say "Hello, Mom, it's me — I'm coming home."

• • •

New Venture

AT PLYMOUTH, MASS., a new business in the town is just getting under way that has won enthusiastic support.

It's a telephone secretarial service furnished by Peleg Chandler, Jr., at a special switchboard in his Market Street home to which his subscribers are connected.

What Mr. Chandler does is to answer calls for people and receive and give messages for them while they are temporarily away from their telephones. His service is particularly a boon to business and professional men.

Mr. Chandler, who is 31 years old now, has been a victim of infantile paralysis since he was a year old. But that handicap has not prevented him from wanting to make his own way in the world. The fact that he can perform right at home the useful service he offers the people of Plymouth fits his circumstances to a "T".

• • •

Dedication

THE ANNUAL REPORT of the Town of Hampstead, Mass., is dedicated to Mary G. Davis, better known locally as "Molly" Davis, "with affection and sincerity."

On November 28, 1907, Miss Davis became Hampstead's first telephone agent and chief operator, with headquarters at the home of her parents. For more than 45 years she has served the town in the same capacity from the same location.

As the Town Report states:

"That obscure little building off Main Street, serving as communication center, is our 'Rock of Gibraltar,' upon whose peak stands Molly, our faithful sentinel, and while our town may be buzzing with activity or lying in silent slumber, she with her magic wand pointing north, east, south or west, directs and protects us."

• • •

Shorts

DIAL HEDRICK 2836 in Kansas City and the operator will tell you there's no such number. HEdrick 2836 did belong to a family in suburban Lake Quivira until a recent TV program showed actors dialing H-E-A-V-E-N on a telephone, reaching Heaven and talking to the saints. After the show, pranksters tried dialing the number and asking for St. Peter. They got HE 2836. With no rest from the ringing telephone, the family had a sleepless night and called the telephone company for help. Their number was changed . . . The New Operator at Snyder, Tex., was drawing static from a pay-station customer who refused to pay 85 cents in charges. Not knowing the standard practice in such a fix, the operator came up with a remedy of her own. "Listen here, mister," she said, "I've got a button on my switchboard, and if you don't deposit the money I'll push the button and it will lock the door of the booth." The result: a quick bong-bong-ding-ding as 85 cents dropped in the slots.

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